

Final Report

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on

Evaluation of the Field Epidemiology Training Program (FETP)

to

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Executive Summary

Title: Evaluation of the Field Epidemiology Training Program

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Purpose of the Study

p 1 This report presents the results of an evaluation of the Centers for Disease Control and Prevention's (CDC's) Field Epidemiology Training Program (FETP) of the Epidemiology Program Office (EPO). The purpose of the evaluation was to assess the effectiveness of the FETP in achieving CDC's objective of building capacity in applied epidemiology in participating countries. The evaluation was designed to provide CDC with lessons learned across FETP programs — information that can be used to improve established programs and to assist with the development of new ones.

Background

pp 2-13 In 1995, CDC's Epidemiology Program Office requested that Battelle evaluate the FETP to assess the program's effectiveness in augmenting epidemiologic capacity in host countries. An important issue was the ability of the FETPs to address the changing public health needs of their countries and the international community. Although eight interim process evaluations of FETPs in participating countries had been completed by external evaluators, the overall approach of the FETP to building epidemiological capacity in host countries had never been evaluated. This report documents the first effort to assess the reach and effectiveness of the FETP program using a single set of instruments across multiple programs. The FETP is a two-year international training program, modeled after the successful Epidemic Intelligence Service (EIS) training program in the US, that is administered

by the Division of International Health in CDC's Epidemiology Program Office. FETP training is characterized by a "learning-by-doing" approach. CDC's specific goals with respect to the FETP are: (1) to train public health professionals in applied epidemiology, (2) to promote the sustainability of training programs, and (3) to initiate and maintain an international public health network that enhances the participating country's epidemiologic capacity.

The FETPs are initiated under agreements between CDC and the country based on a request for assistance to develop a program and demonstrated capacity of the host country to support one. FETP implementations transition through an initial period, with support of a full-time CDC consultant, to become autonomous programs operated by host country staff. The final goal is institutionalization of programs in the Ministry of Health or other host country organizations. After an FETP becomes autonomous, CDC provides specialized technical assistance on request and coordinates an annual international scientific meeting and an annual FETP Directors' Meeting.

The design of the FETP included several weeks of didactic training to provide a foundation in epidemiologic methods and biostatistics followed by supervised field work. The program requires that training take place in the host country, that the total duration of training be at least two years, and that at least 18 months of the training consist of an applied field component addressing epidemiologic problems of public health importance.

The first FETP was established in Thailand in 1980, in response to a request for assistance from the Thai Ministry of Health (MOH), through collaboration among CDC, the World Health Organization (WHO), and the Thai MOH. Within two years of the initiation of the FETP in Thailand, improvements in a range of epidemiological services were noted in that country. As this program's success became known, other countries showed interest in building their own FETPs. Programs have since been initiated in 14 countries: Australia, Colombia, Egypt, Hungary, Indonesia, Italy, Mexico, Peru, the Philippines, Saudi Arabia, Spain, Taiwan, Uganda, and Zimbabwe.

Evaluative Objectives

pp 14-15

While we assessed the FETP as a whole by examining the experience of five FETP/Public Health Schools Without Walls (PHSWOW) countries, this is an evaluation of the FETP as a CDC program rather than an evaluation of any individual program.

The evaluation focused on the degree to which CDC's goals and objectives for the FETP had been met in the countries visited. We looked at methods for the recruitment of countries and of trainees, the quality of training, the public health usefulness of the FETP, the sustainability of programs, and the role of the program in creating national and international linkages among field epidemiologists. The study also assessed the influence of contextual factors on these elements of the FETP.

Methodology

pp 16-19

The evaluation methodology used in this study was comprised of four steps: (1) develop a conceptual model for how the FETP was expected to operate to achieve its objectives; (2) derive research questions, indicators and study instruments from the conceptual model; (3) conduct data collection; and (4) complete data analysis.

Defining the program logic model. The logic model defines hypothesized relationships among inputs to the program from CDC and host countries, the operation of the training program itself, and the outcomes of the program. FETP inputs include the efforts of CDC and host country officials to assess the feasibility of the FETP and the resources available to support it; fund-raising; identifying and hiring the CDC consultant, designing the curriculum and recruiting trainees. These activities lead to initiation of the two-year training program. Ideally, successful implementation of the program produces qualified field epidemiologists who follow careers in the public health sector of their country. This in turn has an impact on the public health infrastructure of the host country, as reflected in more effective surveillance systems, better prevention and control programs, and the expansion of national and international networks within and between countries. Contextual factors impinging on the FETP process might include decentralization of health services in host countries, limited funding, and changes in host-country political priorities.

In conceptualizing the FETP evaluation, we took into account the multiple perspectives of CDC staff, public health officials in host countries, and participants themselves. We broke out program goals, objectives and outcomes for each of these stakeholders, then derived an integrated perspective summarizing consensus as to what all would agree constitutes an effective program. We based core research questions and study instruments on the integrated perspective, remaining alert during data collection and analysis to points of disagreement that might come from differences in stakeholder perspectives.

Deriving research questions and instrumentation. Research questions defined key dimensions of the evaluation and were designed to elicit the information needed assess the program in relationship to the logic model. There were five key research questions for this study.

- # **Program recruitment and development:** Are CDC's methods for recruitment and start-up of programs appropriate for recruiting countries likely to implement an effective FETP program?
- # **Quality of FETP training:** Is the training delivered in the program — in terms of the curriculum, trainee support, faculty qualifications, and the impact of the program on the professional lives of the graduates — adequate to promote the development of trainees into public health professionals who can apply epidemiologic methods in a practical way to a variety of problems?

- # **Public health usefulness:** Are FETPs addressing the public health needs of their countries in ways that decrease the likelihood of disease outbreaks and lower the global risk of disease?
- # **Professional linkages:** Has CDC succeeded in forging FETPs into an international epidemiologic network, increasing the effect of the program by facilitating cooperation among multiple participants in the program?
- # **Sustainability:** Can FETPs be sustained successfully following withdrawal of CDC's on-site consultants, reflecting development of infrastructure that is independent of ongoing CDC support?

Specific study questions were developed to address each of these research questions. The data collection instruments were developed to operationalize the study questions and assure uniform coverage of all issues in all study sites. Instruments were piloted with FETP Directors and graduates attending the 1997 meeting of the International Clinical Epidemiology Network. Following the pilot test, procedures and instruments were revised and submitted to the Office of Management and Budget for approval.

pp 20-25

Data collection. Data were collected through correspondence with and site visits to four FETP countries — Mexico, the Philippines, Spain and Thailand — and from the Rockefeller PHSWOW program in Uganda. The number of countries chosen was determined by funding available for this study. We selected the first four countries because they had autonomous programs that were currently producing graduates. We sought geographic balance, and required that two countries be Spanish-speaking to assess the effect of language on FETP implementation. We added the PHSWOW to assess the effectiveness of this more academic model for training in applied epidemiology. The Uganda PHSWOW has a CDC consultant and operates much like an FETP, but is not yet autonomous.

Three kinds of data were collected from the five countries. These data included a mail survey of the universe of FETP graduates; archival data on the history of the program provided by in-country FETP staff; and semi-structured interviews with FETP directors, administrators, faculty, graduates and trainees in the five countries. We also interviewed Ministry of Health officials and other “users” of FETP graduates in all five countries and held a focus group with program graduates in each country to discuss their professional careers after graduation and how the FETP had affected them.

pp 26-28

Data processing and analysis. Interview notes were checked by both researchers present at the interviews. Tape recordings of the interviews were used for clarification. The interview notes were then content-analyzed using the text analysis software The Ethnograph®. The research and study questions were used to organize data processing, data analysis, and report writing for this evaluation. Each research question and each study question was assigned an analysis code, and that code was in turn assigned to appropriate data items or text segments. Interview data were sorted by analysis code, reviewed, and summarized prior to report writing. Data from the graduate survey were cleaned and verified in Microsoft Access® and analyzed in

SAS®, and cross-site tables were constructed to present the data in summary form. Archival data provided by FETP Directors was verified and loaded directly into cross-site tables for use in the report.

pp 29-30

Methodological limitations of this study. There are several limitations to this study that should be taken into account in the interpretation of the findings. We did not visit all FETP countries, and our findings cannot be generalized to all of them. It is important to note that our focus on autonomous programs means that we do not know why programs fail. Additionally, more data were collected from some countries than others because response rates on the different data collection instruments varied.

Major Findings

pp 31-44

Program Recruitment and Development

Recruitment of the early FETPs was generally initiated after the host country requested some type of CDC technical assistance. CDC responded by beginning a dialog about the benefits of developing field epidemiologists in the country. Looking back to the early days of the four autonomous programs visited, it is striking that each had strong backing from one of several leaders in the health sector of their country. This firm commitment to the concept of the FETP on the part of key officials continued into the implementation phase, even after the in-country founders of the FETP moved on to other things. Initiation of the FETP in all four of the countries resulted from a realization on the part of these key people that the country lacked a solid knowledge and manpower base in field epidemiology.

pp 45-70

Quality of Training

All four FETPs dedicate more time to field work than to class work, as specified in the design of the FETP itself. Graduates of the Uganda PHSWOW reported a 50/50 split in the two components. Practically all of the respondents to the graduate survey (greater than 92%) in the five countries visited reported that epidemiological concepts, tools and methods, prevention and control of specific diseases, and understanding of health services delivery systems were included in the didactic portion of their training. Many respondents (71 to 100%) also reported that their training provided them with opportunities to characterize a public health problem, carry out epidemiological research projects, and communicate epidemiological information. In all of the country FETPs we visited, dissemination skills were part of the core curriculum for both classroom and field training. Consonant with the FETP approach, formal instruction in dissemination principles and precepts is supplemented by opportunities to apply knowledge to real world problems

Training in management skills, such as planning, evaluation and health care financing, were less consistently reported by graduates. The relatively low number of graduates recalling training in communication and dissemination skills is also noteworthy. Responses by the FETP directors to questions about curriculum on the archival data form do not always coincide with what the graduates reported in terms of curriculum

content. Graduates were more likely to remember qualitative methods, health services delivery systems, and research methods than were directors.

Respondents in all of the countries visited thought that one of the best things about the training program is the flexibility of the curriculum. Another strength of the program that was emphasized by respondents is the “learning-by-doing” approach that is characteristic of the FETP model. Respondents also noted several aspects of FETP training that need improvement. At least a few graduates in all five of the site visit countries indicated that a stronger focus on health economics and statistics would have helped them better address the challenges they face in their public health practices. Program planning and evaluation were also identified by the respondents as content areas that could be given more emphasis during training.

Our interviews with public health professionals who are “users” of FETP trainees suggested a number of areas where FETP participants are acquiring new skills that assist them with outbreak investigations. Interviewees mentioned better use of the scientific method and a systematic approach to problem identification, more routinized and formal methods for documenting and monitoring emergent health problems, better coordination with local health officials around the initiation of control procedures, and better diffusion of knowledge to both health professionals and the public in affected communities. Respondents told us that FETP trainees also learn to be creative and to use combinations of methods in their activities.

With decentralization of the health systems in all of the countries visited, those coordinating outbreak investigations are adopting a model of “dispersed expertise.” This approach is moving the FETP from a role as the actual “outbreaker” to a more facilitative role, linking field investigations being conducted by local public health workers with knowledge and resources available nationally. FETP participants become the trainers and supporters of local health professionals interested in developing their own set of scientific and investigative skills. FETP participants also play a role as educators of local health professionals and the public, as interventions are designed and implemented or as preventive measures are instituted.

The majority of respondents — whether trainees, graduates, trainers, or Ministry of Health officials — agreed that FETP training has improved the range and scope of jobs open to alumni of the program. The program is generally considered to be a “stepping stone” to positions in the Ministry of Health. Although other employment options are available to graduates, the majority of alumni remain in the public health sector. In two of the countries visited, FETP graduates have moved up through the Ministry of Health to decision-making positions.

pp 71-96

Public Health Usefulness.

Respondents in the study countries stated that the epidemiologists trained by the FETP have had a noticeable impact on the quality of their national public health programs. As one might expect in the countries with long-established programs, FETP alumni are functioning at multiple levels within the public health system.

“Users” of FETP graduates recognize that the program produces quality public health physicians who have a distinctly different perspective from that of academically trained health professionals. At the same time, the FETP is raising the public health consciousness of academicians and clinicians by providing a more scientific basis for public health action.

FETP participants in all five study countries are conducting outbreak investigations in increasingly decentralized public health systems. Districts, regions, and provinces are developing their own capabilities in outbreak investigation and the number of outbreaks being referred to the national level is steadily dropping. Respondents suggested this requires a new response on the part of the FETP, a move beyond “firefighting.” Epidemiological tools should be applied not just to acute infectious diseases but to other conditions affecting the health of the population, such as chronic diseases and occupational and environmental health problems.

The diffusion of the application of epidemiological tools mirrors the change in scope of outbreak investigations from the national to the regional and local level. The use of epidemiological methods was previously concentrated in the national Ministries of Health. The proper use of these methods is now being diffused to professionals in regional and local Ministry of Health offices as well as to physicians in local hospitals. For example, a graduate focus group participant in Mexico reported that due to the work of FETP physicians X including surgeons and oncologists X hospitals are more sensitive to unusual cases and better able to correctly identify outbreaks and epidemics. This more widespread awareness of the value of epidemiology forms a basis for cooperation of public and private health sectors around issues affecting the health of the population.

We were told that the efforts of FETP staff and participants are leading to reductions in morbidity and mortality in host countries, and were given specific examples of public health actions undertaken that prevented or controlled outbreaks. Trainees become an important resource in outbreak investigations even while they are in training. FETP participants have had numerous impacts on surveillance systems in their respective countries, particularly on communicable disease surveillance. For example, they have used surveillance data to identify high-risk populations and target them for appropriate interventions. A very important contribution being made to surveillance by FETP participants is through support and technical expertise in developing surveillance capacity at the local level.

FETP activities in chronic disease and trauma are less prominent than those in the infectious disease area. As infectious diseases are brought more and more under control in FETP countries, chronic diseases and occupational and environmental health problems are increasing in relative importance. Agencies currently responsible for environmental and occupational health in the study countries are beginning to reach out to the FETP for collaborative assistance.

Most respondents felt that the FETP program and its participants had made great strides in the area of information dissemination. Activities mentioned by respondents include written reports and articles, presentations at meetings and conferences, and

interactions with the media. Because media interactions are an especially important area for public health practice, several FETPs felt they were not doing enough in the area of media relations. The notable exception is the Philippines FETP, which has taken a proactive approach to working with the media, including talking to reporters about the basic principles of outbreak investigation.

Although the public health impact of the FETP has been greatest in the areas of disease reporting systems and the collection of reliable data, FETP graduates are entering employment with responsibilities for program design, monitoring, and evaluation. As they assume positions in the provinces, the FETP graduates are becoming part of a network of trained field epidemiologists who know how to analyze and interpret data. Because of this, regional political decision making is increasingly being influenced by the technical training FETP has provided.

The FETP was not formally conceived as a “train-the-trainers” program. However, the data from the survey of graduates suggests that a great deal of training is going on. Only 9 out of 135 graduates surveyed told us that they did no training at all. Most training delivered by FETP graduates is given to public health co-workers in national or local public health settings, although training of medical staff and university training are also important activities.

pp 97-110

Professional Linkages.

One of the objectives of this evaluation was to assess whether FETP contributes to the creation of professional linkages among epidemiologists both nationally and internationally as an outgrowth of the training. Here professional linkages are broadly defined as any kind of information exchange or collaborative work addressing public health problems. The FETP has contributed to increased communication between graduates and other public health professionals nationally through support for conference participation, fostering the development of presentation skills, and encouraging publication by trainees.

FETP directors were aware of ongoing professional communication and collaboration among graduates in their countries and were able to provide concrete examples of this from the preceding six months. In all five countries visited, FETP graduates participate in epidemiology societies and/or public health associations at either the regional or national level, frequently presenting papers on public health topics. Over one-half of all graduates in each country have submitted manuscripts to national and/or local publications.

However, there is not always an infrastructure to support continuing contact among graduates. In the Philippines, where most graduates are employed in the government sector, they have established an FETP Foundation that they are using to support efforts to contract their services as private individuals. Other countries have active informal

networks of graduates operating through friendships formed during the training and contacts are supported through more formal structures such as annual meetings.

Professional linkages with other disciplines and the public is an area in which many of the FETP programs have been struggling. Respondents recognize the importance of these links but often feel that there are serious deficiencies in the current networks. Key areas identified as needing better linkage include clinical health and medical specialty groups, laboratory systems, social and behavioral sciences, occupational and environmental health sciences, the public and the media, and elected officials. There are some notable successes in creating better linkages with hospitals and laboratories, linkages that were important in identifying and creating field opportunities for trainees

Opportunities for FETP graduates to interact with public health professionals from other countries have been more limited. The strongest international links of FETP programs are those directly with CDC. Connections between FETP organizers and CDC existed at some level prior to FETP, and were instrumental in generating the FETP in the first place. With the implementation of FETPs, these links have become stronger and have broadened to include other institutions in the United States.

There is little evidence of any kind of an international network of FETP graduates, independent of CDC. The annual meeting of FETP directors provides an opportunity for some contact. However, the graduates themselves do not feel that they have had appropriate opportunities to learn about the activities of their counterparts in other countries. Only a small percentage reported that they had communicated via phone, fax, or email, let alone face-to-face, with another FETP trainee or graduate from a country other than their own in the past six months. There is some evidence of regional level networks forming in Asia and Europe.

Several contextual factors hinder the emergence of strong international networks. Most FETP programs are located in non-English-speaking countries. While FETP participants normally can communicate in English, their ability to perform at a professional level in this language varies considerably. Access to the Internet remains limited in many countries, thus restricting opportunities for communication at a distance. The high cost of travel to international meetings is another obvious limitation on person-to-person contact.

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Sustainability

Sustainability refers to the capacity of FETP programs to continue to function after an initial period of substantial outside technical assistance. We defined two indicators of sustainability in the protocol for this evaluation: ongoing production of graduates after attaining autonomy, and institutionalization. *Autonomy* indicates that the FETP program operates without a CDC consultant or other regular technical support from CDC. *Institutionalization* indicates that a program has leadership by a national director, an organizational identity within a national institution, a budget and authority to commit it, and self-sustaining cycles of graduation.

These indicators demonstrate that as a whole the multi-country program is doing well in moving individual FETPs to an autonomous status. Nine of 14 countries still active in the FETP discontinued their relationship with an external CDC consultant at least two years ago. Of the autonomous countries, seven meet the definition of institutionalized, although the stability of organizational location and funding is more certain in some countries than in others.

The data obtained from our site visits show that prospects for sustainability are improved to the extent that a demand for trained epidemiologists continues in the country, the FETP remains responsive to public health needs, graduates of the program are able to successfully address those needs, and the public health decision makers are aware of the role of FETP in meeting those needs

All FETP programs were initiated in response to a perceived need by the host country for additional epidemiologists, particularly field-level epidemiologists — a need that continues. The need for epidemiologists in FETP countries persists and has even increased in recent years largely due to the decentralization of health services taking place. Especially important for the survival and long-term health of FETPs is the capacity to respond to a critical need for applied field epidemiology training at the community level under newly decentralized health systems. The success of the FETP may depend on the degree to which it is able to do this in each of the host countries. Respondents made clear to us that new regional and local health agencies cannot simply replicate operations from the national level. Rather, these agencies need knowledge of and information about public health problems at the local level in order to make decisions and develop solutions. Respondents often stressed that there are still many health workers who do not understand basic epidemiologic principles, and that there are not enough epidemiologists to make maximum use of surveillance systems and data for disease prevention and control.

The sustainability of the FETP is also strengthened to the extent that the program fills a vital need that is not successfully met through other public health training programs. For example, the research focus of most academic programs means they are less oriented to applied public health needs (outbreak investigation, surveillance, disease control, etc.) than is FETP. The FETP has produced a new group of epidemiologists who can fill key positions in the health ministries of their countries. However, for the FETP to build and maintain the support of important public health institutions in their countries, it is important that they seek opportunities to work with alternate training programs. The difference cited most often between the FETP and MPH programs is, of course, the more field-oriented approach of the FETP. Most of our informants felt that the FETP in their country could be strengthened through stronger ties with university and hospital-based MPH programs, although they were averse to turning the FETP into an academic program.

Institutionalization implies that the FETP is placed in some part of the Ministry of Health that supports its mission by supplying staff, funding, and a national director. One respondent suggested adopting the CDC model, in which the FETP would have its own staff and laboratory support — a complete institution that could simultaneously provide training and service. We did not observe an FETP operating

in this comprehensive manner in any of the five site visit countries, although several had created strong relationships with laboratories and hospitals in support of training activities.

Barriers to sustainability stem from uncertain political support within the national health system, an underdeveloped infrastructure for health, and funding limitations. Continuing political support is necessary for maintaining the FETP over time and is best assured by the movement of FETP graduates up through the ranks and into decision-making positions in health ministries. Full recognition of the FETP may require more political support than is currently being provided by the health ministries in countries that, currently, have stable programs. For example, in one country, regional directors often request FETP graduates to work with them, but there is no official commitment of the health ministry to support this relationship.

FETPs need the flexibility to broaden the content of the program to assure sustainability of the programs in the rapidly changing political environments surrounding health in many of the host countries. In one country, we were told that other agencies are developing epidemiological capabilities. If the FETP continues to be based on surveillance and outbreak investigations alone, these activities may be taken over by the regional health units, leaving the FETP without a niche. One approach is to counter this with a national focus on disease causation and control, including risk factor assessment, in planning national health policies. In another country, we were told that there are real questions about the need for the current kind of training in the future, suggesting a need for the FETP to move into new areas and increase technical competencies if it is to grow and develop.

Decentralization of the political and health care system has changed the political stakes for epidemiology. Increasingly the financial resources for public health are located in communities. Political and financial support for the program must therefore be sustained at both national and regional levels. Trainee recruitment can be affected because trainees, often employees of regional or local health agencies, must be given release time and at least some funding from localities in order to attend FETP training. Manpower shortages at the local level and a scarcity of funding to provide trainees' salaries during their absence can be difficult at the local level where resources are limited. In addition, returning trainees may command higher salaries due to their newly acquired skills, salaries that local health agencies may find difficult to meet.

Permanent placement of the FETP in a Ministry of Health reduces political threats to sustainability, but this kind of institutionalization may not be stable in countries with rapidly evolving health systems. We heard strong opinions about the necessity of keeping the program located within a health ministry in order to ensure that it remains field-based and responsive to the needs of the country. However, even though incorporation into a university setting is resisted, FETP directors desire better integration of the FETP into the academic sphere to strengthen the theoretical basis of the program and linkage of FETP graduates to national and international health professional networks.

Inadequate support for trainers may limit the capacity of the FETP to continue training or to expand the training to meet changing needs. In many countries, FETP faculty activities are part of the responsibility of service-oriented staff in the health ministries. The academic and methodologic background of the trainers is not always strong. But trainers seldom have opportunities to enhance their skills because of other commitments. In one country, trainers we spoke with emphasized the importance of what they were doing as FETP trainers, but pointed out that they could only volunteer for a limited time without release time or a salary.

Support of FETP trainees, for salary and living expenses as well as the direct costs associated with training, is essential for long-term continuation of the program. At present, trainees often struggle to maintain their participation in the program. Some receive all or part of their salaries from the national or regional health units that employ them. Many do not. Others maintain households for their families in their home community because the costs of living are prohibitive in cities where training is held. There will, of course, always be some who are willing to make such sacrifices to receive training. However, the need for such sacrifices does not bode well for the sustainability of a program over time.

Recommendations

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In developing this section, we have tried to focus our recommendations on program areas in which CDC can exert some influence. Since CDC's role is largely in a facilitating and advisory capacity, many of these recommendations can only be implemented through CDC's technical influence and prestige.

Recommendations for Improving Program Recruitment and Development

In establishing new programs, CDC should look for a strong in-country counterpart to champion the program in the Ministry of Health (or similar national agency) in which the FETP must eventually become institutionalized. CDC should identify these individuals early in the process and assure their commitment to the FETP.

CDC should work to develop guidance for new FETPs based on precedent, learning from past problems and difficulties as well as from successes, and focusing on the fundamental elements of programs that work. For example, we have seen in this study that it would be a good idea to liberate trainees from some of their work when they return to their positions during the second year of the program. CDC could bring this information to negotiations for future studies.

Before CDC commits to the support an FETP, they should be assured that all parties involved agree on the conditions under which the program is being initiated based on lessons learned in other countries. If there is significant deviation from what experience has shown to be effective, CDC should consider carefully the likelihood that the program may fail to reach autonomy or become institutionalized.

CDC should encourage FETPs to broaden the trainee selection process by involving a variety of Ministry of Health program directors, as well as representatives from other government agencies concerned with occupational health, environmental health, injury and other non-communicable disease areas. This would improve buy-in to the FETP at the national level and might enlarge the trainee pool by making the program more broadly known to other potential users of FETP graduates.

Recommendations for Improving the Quality of Training

CDC should encourage host country programs to develop a formal curriculum that covers other surveillance systems, moving beyond infectious disease into surveillance of non-communicable diseases, injuries and violence. There should also be training in the application of other epidemiological methods to these conditions.

The field experience should be broadened to include the application of epidemiological methods to a variety of public health issues so that trainees will gain a wider experience in program planning and evaluation, public health administration, health economics and similar areas. This will prepare trainees to address the increasingly complex problems being referred to FETPS from the regional and local levels.

Material on the political realities of public health delivery and its implications for managing outbreaks and other public health problems should be covered. Practicing epidemiologists will need increased political sensitivity under decentralization. They can be prepared for this if it is explicitly addressed as part of their training. In this context, media relations should be part of the FETP curriculum to prepare trainees to work with the press. The Philippines FETP provides a model of how this can be done.

Training should make better use of targeted, special purpose workshops that provide trainees with specialized training and expertise. For example, one graduate suggested a workshop on how to conduct negotiations with superiors in Ministries of Health. Another suggested ending training with a workshop that integrates all of the elements presented in the program. Whatever the topic, focused attention on a critical issue for one or more days is a good way to forge theoretical and practical experience into a useful tool.

Distance learning options should be explored for trainees who may not be able to leave their positions for the full length of the program. Make optimum use of existing technology and be prepared to upgrade technological approaches as better ways of doing this become available.

Recommendations for Improving Public Health Usefulness

For the greatest impact of the FETP on the country's public health infrastructure, trainees must apply their training effectively. Epidemiology training alone will not create public health systems that can adapt to shifting organizational arrangements and emergent public health needs; it must be applied to the country's leading health problems.

FETPs should be encouraged to move from a reactive to a proactive mode, exerting their influence on decision-makers in the Ministry of Health to promote important public health goals especially for surveillance. Surveillance systems are needed that will help identify problems in advance of a crisis, so that communities can be advised about preventive measures. When the needs of the country warrant it, they should move strategically to establish surveillance of conditions in addition to acute, infectious diseases, including chronic diseases, trauma and injury, and occupational and environmental health.

CDC can encourage FETPs to broaden the program to include training in the basic skills of management and administration, program design and development, planning and evaluation. These can provide important connections between the FETP and the policy and decision-making apparatus in Ministries of Health. In many programs, the majority of FETP graduates will end up in positions with administrative responsibilities at various levels. In these positions, FETP graduates will need to be able to plan and evaluate programs, as well as to design, implement, and monitor interventions and health systems.

When programs fail, they almost always fail because of a failure of leadership and team-building. Even in the course of the core FETP activities of surveillance and outbreak investigation, team-building and leadership skills are important for the mobilization of staff and health professionals in support of these activities. Leadership can and should be taught and practiced in training programs like the FETP.

Recommendations for Improving Professional Linkages

Establishing FETPs in the participating countries has developed and strengthened the ties of the host countries to CDC and other health organizations in the United States. Connections through the CDC consultant during the early years of the programs have led directly to important contacts and collaboration with public health researchers at CDC and elsewhere. Although FETP has not yet had a large impact on broader international networks, this is a role that the long-standing programs are eager to see grow and expand.

It would be helpful if CDC could expand its efforts to place the FETP within an international network of public health organizations. Its role would encompass helping to develop the basis for an international epidemiologic network that should be governed and managed outside of CDC. The Association of State and Territorial Health Officials is a model for this. Also, regional networks would be an important step to broaden the base of participation in the network and generate new sources of regionally appropriate technical assistance.

Another important role for CDC would be to provide language and editorial assistance for publications by FETP graduates in English-language international journals. CDC has clear expertise in this area and this kind of support fits well within CDC's technical assistance mission.

Improved language support services at international meetings for epidemiologists whose primary language is not English is important. This could be done by mobilizing people who are bilingually competent as facilitators. It would be helpful to provide or designate translators to help with questions at FETP Directors' Meetings and other international meetings. CDC should translate written material at least into Spanish. FETP directors and trainers, even trainees, may be willing to help if asked.

Recommendations to Improve Sustainability

Many of the recommendations in this area deal with ways to look ahead to autonomy and institutionalization of FETPS and prepare the way for this to happen. This can be done by advance planning and by seeking opportunities to ensure that the FETP is recognized widely for the good work that it does.

CDC could work with host countries to raise the profile of FETP achievements so that the program can maintain itself despite political changes and can continue to attract trainees. Sometimes there are problems with communication and dissemination of the program's accomplishments, and people who make decisions about priorities and funding in the Ministry of Health need to be convinced of the benefits of FETP.

It is important to seek opportunities to help health administrators, at all levels and in all sectors of the health system, to understand the importance of epidemiology as a public health science. This can be done by showcasing the FETP in any way available: at professional meetings of other medical fields, at special purpose conferences, and in professional and popular publications. The role of the FETPs as advocates for epidemiology in the health sectors of their respective countries was a recurring theme in our site visits. One respondent told us that clinical epidemiology will not have an impact on the larger health issues, yet that is where the best people are heading. There needs to be greater recognition for field epidemiology for the FETP to thrive and accomplish its public health mission.

There needs to be an increase in the profile of the program in the Ministry of Health. Faculty support, through sponsorship of ongoing, in-country research with short-term or long-distance technical assistance from CDC, would be of great benefit. This would also provide research opportunities and an example for trainees. It also could generate a favorable reputation for the FETP among government officials, academics and clinical practitioners.

Sustainability can be enhanced by developing a broad and precise consensus among health professionals at the district, regional, and local levels about what the FETP can do in the community. Establishing a dialogue around the FETP at the community level will generate buy-in, and potentially trainees, so that interest in the FETP comes from inside the community rather than being foisted on the community from outside.

Finally, at start up, CDC can work with in-country health professionals and CDC consultants to develop an institutionalization plan appropriate to the specific country. This should contain goals and objectives, proposed methods for attaining them, and reasonable timelines. This plan should be monitored and discussed as part of regular program reviews.

Recommendations for CDC's Future Role in the FETP

Many of these recommendations cannot be implemented directly by CDC because of the nature of the FETP. To protect the flexibility of the program and the in-country ownership that is essential for sustainability, CDC can only give advice as persuasively as possible. However, there are three clear roles for CDC that are relevant to FETPs X whatever their relationship to CDC, their own Ministries of Health or their stage in the FETP process.

First, CDC can provide prestige and political clout to those in-country advocates who are championing the program. Sometimes just having visible CDC involvement improves the position of the Ministry of Health in leveraging support for the program. For example, having country FETP staff go to Atlanta or participate in international meetings or having site visits from CDC staff can help raise the profile of the FETP in the host country.

Secondly, specialized technical assistance is important. This is a role that CDC — and especially the Epidemiology Program Office X has often effectively assumed to support public health in the United States as well as internationally. Short term, long-distance technical assistance is best. Long-term support in-country is very costly. However, respondents, even in autonomous countries, see a need for continuing CDC's role in providing specialized technical assistance on request.

Finally, support of an international network is a role that CDC has played in the past and can continue to play in the future. This is a special but not always problem-free niche that CDC has established over the 18 years of the FETP. CDC's focus is on turning over the work of building and maintaining connections to colleagues in other parts of the world. Top-down networking will not work. Unless a network emerges from the bottom up, there will not be the initiative to activate it and use it. CDC's role should be that of a leader among equals, recruiting others to help build and maintain stable linkages.

1.0 Introduction

In this chapter, we describe the purpose of the evaluation reported in this document. We present a description of the Centers for Disease Control and Prevention's (CDC) Field Epidemiology Training Program (FETP) as it was conceptualized by CDC and implemented in selected countries. In the final section of this chapter, we present a guide to the remainder of this report.

1.1 Study Purpose

The purpose of this evaluation was to assess the effectiveness of the FETP in achieving CDC's objective of building capacity in applied epidemiology in participating countries. The evaluation focused on the current status of the FETP in multiple in-country implementations, including recruitment of countries, the quality of training, the public health usefulness of the FETP, the sustainability of programs, and the role of the program in creating national and international linkages among field epidemiologists. The study also assessed the influence of contextual factors on these elements of the FETP and will provide CDC with lessons learned across FETP programs, information that can be used both to improve established programs and to assist with the development of new ones.

In 1995, the Epidemiology Program Office of CDC requested that Battelle evaluate the FETP to assess the program's effectiveness in augmenting epidemiologic capacity in host countries. An important component was the ability of the FETPs to address the changing public health needs of their countries and the international community. Although eight interim process evaluations of FETPs in participating countries had been completed by external evaluators, the overall approach of the FETP to building epidemiological capacity in host countries had never been evaluated. This report documents the first effort to assess the reach and effectiveness of the FETP program using a single set of instruments across multiple programs.

1.2 Background

The FETP is an international training program administratively located in the Division of International Health of the Epidemiology Program Office (EPO) at the Centers for Disease Control and

Prevention (CDC) in Atlanta, Georgia. CDC's specific goals with respect to the FETP are: (1) to train public health professionals in applied epidemiologic skills, (2) to promote the sustainability of autonomous FETPs, and (3) to initiate and maintain an international public health network that can enhance the epidemiologic capacity of all participating countries. The FETP is modeled after the successful Epidemic Intelligence Service (EIS) training program in the US.¹ Like the EIS, the FETP is a two-year training program for health professionals, largely physicians, that aims to provide a continuous supply of highly trained and experienced epidemiologists for the national health care systems in FETP countries.

The EIS training program was created in the post-World War II era with the primary goal of developing CDC's capacity to respond to the requests of states for "epidemic aid" (Langmuir 1980). Over the years, the EIS training program has not only served its original purpose, but has contributed to the development of epidemiological methods and the shaping of epidemiological practice in the US and abroad. The international reputation of the EIS training program led other countries to request assistance from CDC in developing similar programs. The FETP was developed in response to these requests.

The first FETP was established in Thailand in 1980 as a result of the collaboration among CDC, the World Health Organization (WHO), and the Thai Ministry of Health (MOH), in response to a request for assistance from the Thai MOH (Field Epidemiology Training Programme 1981). Within two years of the initiation of the FETP in Thailand, improvements in a range of epidemiological services were noted. The investigation of outbreaks had become more standardized and detailed, the reporting and publication of data on some infectious diseases had become more timely, and the implementation of a computerized surveillance system had begun (Field Epidemiology Training Programme: Annual Report 1981-82). As this program's success became known, other countries began showing interest in building their own FETPs. Programs have since been initiated in 14

1 The EIS program began in 1951 and now provides epidemiologists to US Health Departments at local, state, and national levels (Thacker et al. 1990).

countries: Australia, Colombia, Egypt, Hungary, Indonesia, Italy, Mexico, Peru, the Philippines, Saudi Arabia, Spain, Taiwan, Uganda¹, and Zimbabwe.¹

1.3 Description of the FETP

The FETPs in individual countries are initiated under agreements with host countries that request assistance in developing a program and demonstrate the capacity to support one. The FETP process itself includes mobilization of program activities in the host country, delivery of training programs, and ongoing technical support by CDC and in-country experts. A goal is transition of the program to autonomous status. After FETPs become autonomous, CDC provides technical assistance on request and coordinates an annual international scientific meeting and an annual FETP Director's meeting.

Although there is some variation in FETPs across participating countries and over time, all FETPs move through three main phases of development:

Phase 1: Recruitment Phase, in which CDC works with host countries to design an FETP and obtain funding and staffing for the program.

Phase 2: Building and Development Phase, in which FETP program staff in the host country work with CDC in-country consultants to implement and refine the program.

Phase 3: Autonomous Phase, in which the FETP program operates without a CDC consultant.

Table 1.1 shows the development phase of FETP countries at the beginning of this study in 1995.

Table 1.1 Participating Countries by FETP Development Phase

Phase	Description	Participating Countries
Phase 1	Recruitment Phase	Bolivia, Dominican Republic, Georgia, Guinea, Israel, Morocco, South Africa, Venezuela, and Zambia
Phase 2	Building and Development Phase	Colombia, Egypt, Hungary, Uganda, and Zimbabwe
Phase 3	Autonomous, institutionalized, and producing trainees	Australia, Canada, ² Mexico, and Thailand
	Autonomous, not institutionalized, and producing trainees	The Philippines and Spain
	Autonomous, institutionalized, but not producing trainees	Indonesia, Italy, and Peru

In the Recruitment Phase, FETPs are established through a process of negotiation between CDC and individuals representing responsible agencies and organizations in the potential host country. CDC and the host-country government work together to secure the necessary funding from ministries, academic

1 Uganda and Zimbabwe are modified FETPs in the framework of the Rockefeller-sponsored program of "Public Health Schools Without Walls" (PHSWOW). The scope of PHSWOW has a broader public health focus than typical FETPs. PHSWOW goes beyond specific epidemiology training to include program management, administration, budgeting, environment and occupational health issues, etc.

2 Canada developed its FETP independently in the early 1970s, without direct US assistance beyond ad hoc consultation.

institutions, donor agencies, and other key national and international partners. These funds are used to support a long-term CDC consultant and to cover other program operating costs.

In the Building and Development Phase, all FETPs share a common feature of having either an EIS or FETP graduate as the long-term technical consultant (Music and Schultz 1990). The in-country consultant serves as the principal line of communication between the host country and CDC in Atlanta during the period before the FETP becomes autonomous. The consultant is assigned full-time to the FETP and works with local FETP counterparts on matters related to the curriculum.

In recent years, several FETPs have adapted the original program to respond better to their countries' needs. However, regardless of the specific training schedule, FETP training is defined by a "learning-by-doing" approach similar to that used by most hospital-based residency programs in the US (Music and Schultz 1990). This experiential component serves the goal of training cadres of competent public health professionals in applied epidemiology, despite the variations in location and practicum type within and between country FETP programs (Holt and Fishbein 1996).

In the Autonomous Phase, programs do not have a full-time CDC consultant directing the program. In this phase, the FETP is under the control and responsibility of professionals in the host country. In most cases, there is no external funding for autonomous FETPs. An FETP is expected to move to autonomy after a period of five to seven years has elapsed (Holt and Fishbein 1996); current programs took from three to seven years to achieve this status.

The ultimate goal of FETP development is to move towards sustainable institutionalized programs. Institutionalized programs are those that have: (1) leadership by a national director, (2) an organizational identity within an existing national institution, (3) an operational budget and authority, and (4) self-sustaining cycles of graduation (Music and Schultz 1990). The organizational home may be an academic institution or a governmental health agency.

The initial design of the FETP included two full years of supervised field work following several weeks of didactic training and exercises to provide a basic foundation in epidemiologic methods and biostatistics. The basic parameters of the program require that training take place in the host country; the total duration of training be at least 2 years; and at least 18 months of the training consist of an apprenticeship or practicum that involves addressing epidemiologic problems of public health importance (Definition of a Field Epidemiology Training Program 1995.)

Trainees are recruited via formal and informal channels. When trainees enter the FETP they attend courses taught by the long-term consultant, the local FETP staff, CDC short-term consultants, and

experts from the MOH and local universities. Although the trainees are usually physicians, FETP programs have also trained dentists, PhDs, veterinarians, nurses, pharmacists, and laboratorians.

1.4 Organization of this Document

In this chapter, we have described the role of this evaluation in assessing the degree to which the FETP program, as implemented by CDC, is achieving its objective of building capacity in applied epidemiology on an international scale. In the chapters that follow, we will describe the evaluation strategy used, detail our findings, and suggest ways in which what we have learned might be applied to improving and expanding the FETP.

This document is divided into 10 chapters. In Chapter 2, we present the conceptual framework that has guided our evaluation of the FETP. Chapter 3 provides a description of the methodological approach used to carry out this study. In Chapters 4 through 9, we present the findings from the evaluation, organized according to the overall research and study questions:

- # Recruitment of countries (Chapter 4)
- # Quality of FETP training (Chapter 5)
- # Public health usefulness of FETPs (Chapter 6)
- # National and international linkages (Chapter 7)
- # Sustainability of FETPs (Chapter 8)
- # Lessons Learned and recommendations (Chapter 9)

Appendix A contains the research and study questions; Appendix B contains the data collection instruments used in this evaluation; Appendix C contains selected cross-site data tables; Appendix D contains the analysis codebooks, and Appendix E contains a rapid assessment tool for use by CDC representatives during short country visits.

2.0 The Evaluation Concept

In this chapter, we develop the conceptual basis for the evaluation of the FETP. In doing so, we operationally define what the program was envisioned to do by those who put it into effect, how its designers felt that it should operate, and the kinds of outcomes that they hoped it would achieve. We discuss the perspectives of various groups of participants with potentially different expectations and needs related to the program – the stakeholders. Based on this operational concept of how the FETP “should work,” we developed specific objectives that guided the development of the protocol used for this evaluation. This conceptual framework for our evaluation of the FETP is based on data collected in a prior project during which we interviewed key stakeholders at CDC and from host countries, participated in discussions at the April 1996 FETP Directors’ Meeting, and reviewed documents and prior evaluations of the individual FETPs.¹

2.1 Program Logic Model

Figure 2.1 presents a logic model for how the FETP operates to achieve its objectives. The process consists of: (1) inputs to the program, (2) the training program itself, and (3) outputs resulting from FETP training. The figure also suggests how contextual factors may affect the success of individual FETPs.

Inputs. An FETP comes into being either when CDC contacts a country’s health authorities or when a country requests support from CDC to establish an FETP. However, these mechanisms do not necessarily result in an FETP. Once there is interest in starting an FETP, CDC staff visit the country to conduct a feasibility assessment, focusing on the resources available and the amount of in-country support for an FETP. If the results of the assessment are positive, CDC assists the host-country Ministry of Health (MOH) in its fundraising efforts. Once funding is identified, a full-time CDC consultant is hired to work with health professionals in the host country to develop and implement

1 Betts, C. *Evaluation of the Field Epidemiology Training Program*, research protocol submitted to CDC under Task 12 Contract No. 200-93-0626, Arlington, VA: Battelle, 1996

Figure 2.1

the FETP. Following this, the FETP curriculum is developed and trainees are recruited and selected. This concludes the input phase of the process.

The FETP training process. The two-year FETP training process includes both class work and field work. Class work exposes participants to basic epidemiological methods, theories, and tools. Field work provides trainees with hands-on experience in solving actual public health problems and helps them to develop skills that will allow them to play significant roles in the public health system of their country. The precise mix of class work and field work varies, but the FETP places a strong emphasis on field experience in areas such as outbreak investigations and surveillance. Ideally, the presence of the FETP program will strengthen the public health infrastructure of the country by providing epidemiological support from trainees, even before the program has produced a significant number of graduates.

The content of FETP training should be appropriate to the health status of the host country's population, particularly to the stage in the epidemiological transition from morbidity and mortality predominantly caused by infectious diseases to patterns where chronic diseases related to life-style assume the major role. The complexity of the methods required for epidemiological analysis of chronic diseases (environmental, occupational, and behavioral risk factors in particular), and for research and evaluation is usually greater than that required to carry out acute infectious disease epidemiology. Therefore, if and when a country passes through this transition, the curriculum of the FETP may need to be adjusted to address its epidemiological profile.

Outputs. The outputs of the FETP include a *product* (well-trained and qualified field epidemiologists), *outcomes* (trainees who follow public health careers in the MOH, academic institutions, or other public health agencies), and an *impact* on the public health of the host country. As examples, the impacts should be reflected in the strengthening of surveillance systems, in better prevention and control programs, in the expansion of national and international networks within and between countries, and in an overall enhancement of public health capacity in the host country. Outputs and impacts are further discussed below.

2.2 Description of the Program Outcome and Impact

An operational definition of what the FETP hopes to accomplish is needed to evaluate program effectiveness. The concept of program outcome must be specific enough to determine the presence and strength of an outcome. At the same time, it needs to be broad enough to encompass the widely varied and differently timed implementations of the FETP in participating countries.

The principal outcome envisioned by developers of the FETP is a cadre of trained field epidemiologists who will bring systematic, epidemiologically sound approaches to the prevention and control of health problems that are priorities in their country. As trainees graduate and assume responsible positions, it is anticipated that they will move into careers in key positions in the public and/or private health systems of their countries. Over time, this will result in an expansion of the epidemiological and public health capacity of the host country.

A systematic approach to health problems — developed in the FETP training — is the core of this outcome, ideally replacing politically-driven or crisis-driven management of health problems. Figure 2.2 illustrates the kind of approach to public health problems that will be observed among FETP graduates if the program is achieving this objective. Participants in the FETP learn this approach by taking part in characterizing the priority public health problems that have been identified in the host country and by analyzing and interpreting data they have collected on the problems. FETP participants' involvement continues throughout the final phases of the approach — program design, implementation, evaluation and dissemination of results.

FETPs differ from other epidemiology training programs in that roughly three-quarters of the training takes place in the field, addressing real public health issues and solving current public health problems. During the field component of FETP training, participants should become proficient in characterizing a public health problem in terms of magnitude, severity, and distribution, and determining trends of disease and risk factors. They should go beyond reacting to current crises to monitoring public health programs, evaluating the outcome and impact of these programs, and feeding the results of programs back into improved management of other problems and programs.

This program outcome will be observable in the placement of FETP graduates in jobs in the Ministry of Health, in regional health agencies, and in private organizations where they can make an impact on health policy and practice. In these contexts, graduates of an effective FETP will be using epidemiological skills and tools effectively to:

- # Manage, operate, and interpret epidemiological data
- # Organize, operate, and evaluate public health surveillance systems and/or other information systems
- # Design and implement epidemiological surveys

Figure 2.2

- # Conduct outbreak investigations
- # Identify, respond to, and find solutions to emerging threats to the public's health
- # Identify risk factors and populations at risk
- # Monitor the efficiency of health service delivery and utilization of health resources
- # Evaluate the effectiveness of health promotion and preventive interventions
- # Disseminate and communicate health information with clarity, persuasiveness, and in a timely manner to health planners and policy makers
- # Participate in health planning processes and negotiate effectively with other government sectors to achieve goals

Successful achievement of these program outcomes will be realized in the program impact envisioned by those who established the FETP – a strengthened public health infrastructure both within host countries and in the linkages of host-country professionals to an international network of applied epidemiologists. Evidence for this program impact will include improved public health surveillance systems, new and more effective programs for disease prevention and control, better and more data-driven management of health programs, and improved communication between health professionals within and outside of the host country.

2.3 Stakeholder Perspectives

The FETP operates at several different levels that must, at least in principle, be distinguished from one another if the motives and behaviors of stakeholders are to be understood. There is the CDC level with the goal of meeting the CDC objective of protecting the health of the US population by acting to strengthen public health internationally. There are individual FETPs that are designed to meet the public health needs of their countries in their own context. Finally, there are trainees and graduates of the FETP who are pursuing their own professional and personal goals.

Different actors at different levels of organization may not have the same needs and interests with respect to the FETP. Contradictory evaluation results may reflect the different needs and experiences of stakeholders coming from different perspectives. For this reason, an evaluation requires *a priori* definition of potential points-of-view that may be encountered and we have tried to consider the FETP from three different perspectives:

- # CDC's perspective, as expressed in CDC's mission statement and goals for the overall FETP and based on discussions with CDC staff.
- # The host country's perspective, in terms of identified health needs and the steps undertaken to meet these needs.
- # The participants' (trainee's and graduate's) perspectives, as indicated by their own professional goals and aspirations.

A study framework integrating these three perspectives is presented in Table 2.1. In this framework, objectives, goals, outcomes, and inputs for each of these three perspectives are summarized in the first three columns of the table. When the three perspectives in this framework are compared across columns, it becomes evident that there is considerable overlap among the FETP stakeholders. This common ground became the basis for an integrated perspective presented in the fourth column of the table. The fourth column summarizes points of agreement as to what stakeholders would concur constitutes an effective program. Reading down the columns it is possible to trace FETP goals, program objectives, outcomes, and activities and relate them to the ultimate expected result (or strategic objective) from each perspective and across the program as a whole.

It is important to note that contextual factors underlie this framework which are not under the control of program stakeholders, but which affect the program's capacity to perform effectively or to achieve their objectives. For example, at the level of strategic objectives, CDC may decide that by helping to strengthen epidemiology in host countries, the agency will contribute to a reduction of the health threats to the US population posed by emerging infectious diseases abroad. But for this to be true, it must be assumed that developing a cadre of qualified health professionals has a high enough priority in target countries to command scarce resources, and that the country has a functional sanitary infrastructure that supports and can effectively utilize trained field epidemiologists. For this reason, contextual factors are important to the evaluation even if they are external to the program and not subject to modification by program stakeholders.

Decentralization of public health and health services is a central contextual factor that must be considered in any discussion of the current or future role of the FETP in the health sector of their countries. In all of the countries that we visited, the authority and responsibility for managing the health of the population had evolved from the national Ministry of Health to the regional or district level. This shift in roles of host country Ministries of Health and in the likely career paths of FETP graduates has profoundly effected all of the programs that were studies here.

Table 2.1 Study Framework

Inputs	CDC's Perspective	Host Country's Perspective	Participant's Perspective	Integrated Perspective
	CDC responds to country requests to establish FETPs and provides effective consultants and TA support as needed. Country selection process tends to produce sustainable FETPs.	Need for an FETP is recognized. Country government is committed to developing an FETP. MOH develops curricula with CDC consultant. Trainee selection procedures are merit-based. MOH provides paid leave for FETP trainees. MOH provides post-graduate support to participants through employment, credentialing, recognition, and advancement.	Participant is sufficiently qualified to benefit from FETP training. Participant is exclusively dedicated to training while in progress. Participant remains committed to the public health field after graduation.	CDC (1) responds to country requests to establish FETPs and country selection process tends to produce sustainable FETPs, and (2) provides effective consultants and TA as needed. Trainee selection procedures are merit-based and participants are qualified to benefit from FETP training. MOH provides paid leave to trainees and supports them after graduation. Trainees are exclusively dedicated to training while in progress and remain committed to the public health field after graduation.
Program Goals	Strengthen public health infrastructure in host countries. Share knowledge and experience with global public health community. Maintain CDC's status as an international public health leader.	Strengthen host-country public health capacity by training teams of qualified professionals who can function effectively in national and global public health communities.	Play an important role in developing and maintaining public health infrastructure. Achieve professional and personal fulfillment.	Public health infrastructure of individual countries is strengthened by (a) training public health professionals, (b) building public health surveillance systems, and (c) developing national and international networks of well-trained and effective public health professionals.
Program Objectives	Host countries have well-trained public health professionals. FETP countries use public health professionals effectively. A global network links FETP graduates among themselves and with CDC and the global public health community.	FETP graduates (1) have the skills needed to help improve public health in the host country, (2) can be absorbed effectively by the host-country health system, and (3) are linked among themselves and with the global public health community.	Participant (1) is well-trained and receives relevant and necessary skills; (2) is utilized effectively and receives accreditation, advancement opportunities, and recognition; and (3) is linked to other FETP trainees, to CDC, and to the global public health community.	Countries have well-trained and effective public health professionals. Countries use their trained public health professionals effectively. National and international networks link these professionals among themselves and globally.
Outcomes	FETPs are established. FETP training is delivered effectively. FETP graduates are produced and are (1) well-equipped to address host-country needs, and (2) linked among themselves and with CDC. FETPs are sustainable.	FETP program is established. FETP participants receive training. FETP graduates are well-equipped to serve host-country needs and integrated into the public health community. FETP program can be sustained.	Participant receives FETP training. FETP graduates are absorbed by the public health system and have opportunities to practice what they have learned. FETP training equips trainee to function effectively in the host-country environment and within the global public health community.	FETPs are established (recruitment). Qualified FETP graduates are produced (quality of training). FETP graduates are effectively integrated into host-country public health infrastructure (public health usefulness). FETP graduates are integrated into the global public health community (linkages). FETPs are sustainable (sustainability).
Strategic Objective	Contribute to global health and well being and protect U.S. population from exposure to infectious diseases introduced from abroad.	Protect health and well being of the host-country population and develop public health infrastructure, including a global outlook.	Achieve occupational stability, professional advancement and recognition, "adequate" financial compensation, and personal fulfillment.	Promote health and quality of life at home and in the global community. Develop public health infrastructure in individual countries and globally.

2.4 Research and Study Questions

The goals, objectives, outcomes, and inputs from the integrated perspective were used to generate the core research and study questions for this evaluation. Research questions define key dimensions of the evaluation and are designed to provide CDC with the information needed to (1) recruit countries that are likely to be successful in implementing an FETP, (2) define approaches that are demonstrated to be effective in improving the capacity of in-country public health staff, and (3) design technical assistance and remedial actions in the most effective way possible. Research questions cover the following areas:

- # ***Assessing program recruitment and development*** – the appropriateness of CDC’s methods for recruiting FETP countries, assuring that CDC directs limited resources to those countries likely to implement an effective program.
- # ***Assessing quality of FETP training*** – the quality of training being provided by the FETPs, permitting CDC to improve curricula, materials, trainee qualifications, and faculty preparation in those areas that are not fully effective.
- # ***Assessing public health usefulness of FETP*** – the degree to which the FETPs are addressing the public health needs of their host countries, decreasing the likelihood of disease outbreaks and the global risk of disease.
- # ***Assessing national and international linkages in FETP*** – the extent to which FETPs constitute an international epidemiologic network, not only building capacity in individual countries but also increasing the effect of FETP by supporting cooperation among multiple participants in the program.
- # ***Assessing sustainability*** – the extent to which FETPs can be sustained successfully following withdrawal of CDC’s on-site consultants, allowing CDC to support the development of infrastructure that is independent of ongoing US support.

Specific study questions were developed to address each research question as shown in Table 2.2. The data collection instruments were developed to operationalize the study questions. In designing the study instruments, we were careful to include data collection activities that provided us with information on each of the areas addressed by our research questions. A complete list of study questions and the data sources for each question is provided in Appendix A.

Table 2.2 Research Questions by Evaluation Objective

I. Assessing program recruitment and development
How and why was interest generated in the existing FETP countries?

What steps led from initial interest to the establishment of FETPs?
Do host countries feel satisfied with the amount of input they had into this process?
How were programs customized to fit the needs of the host countries?
How can the program recruitment and development processes be improved upon?
II. Assessing the quality of FETP training
What is the content of the FETP class work training in the different FETP countries?
What is the content of the FETP field component in the different FETP countries?
What is the balance between FETP class work and field work?
How could the quality of FETP training be improved?
What contextual factors influence the ability of trainees to derive benefit from FETP training?
III. Assessing the public health usefulness of FETP
Is FETP training helping equip graduates to address key public health issues in the host country?
What impact are FETP graduates producing on the public health environment in the host country?
How could the public health usefulness of FETP training be improved?
IV. Assessing professional linkages through dissemination and networking activities
What professional linkages and networking opportunities currently exist for FETP graduates?
What role did the FETP play in the maintenance and development of these systems?
What contextual factors influence the development and maintenance of these systems?
V. Assessing the sustainability of FETPs
What factors contribute to the sustainability of the FETPs?
What are the obstacles or potential threats to the sustainability of the FETPs?

3.0 Study Methods

In this chapter, we describe the methods used to conduct this study: the site selection criteria, the instrument development, the data collection, and the data analysis. At the end of this chapter, we discuss some possible methodological limitations in our approach. Battelle's main considerations in the design of this study were to (1) create a uniform design to support an understanding of the overall FETP approach in the context of individual countries, (2) obtain as broad a coverage in terms of respondents as possible, (3) maximize response rates and data quality, and (4) minimize burden on the FETP Directors and other respondents.

3.1 Site Selection

The number of countries visited was based on the resources available to this project. These resources allowed for site visits to five out of the sixteen FETP/PHSWOW countries. Site visits were conducted in Spain, Thailand, The Philippines, Mexico, and Uganda. Site selection occurred in March 1996 using several criteria¹:

- # The FETP had trainees enrolled currently and was producing graduates
- # The group of countries chosen should be geographically balanced, and at least some of them should be Spanish-speaking.
- # At least some of the countries chosen should have autonomous FETP programs.

Three of the 16 candidate countries (Indonesia, Italy and Peru) were eliminated from consideration because they were not producing trainees at the time of site selection. Within the 13 remaining countries, we sought geographic balance, selecting at least one country each from Europe (Spain), Asia (Thailand and the Philippines), Latin America (Mexico), and Africa (Uganda). Language was considered another potentially important factor affecting CDC implementation of the FETP. This study was not large enough to select a country from each linguistic group represented in the 16 training

¹ Although willingness to cooperate was originally considered a site selection criterion, the fact that all of the countries selected were willing to cooperate meant that this criterion did not actually factor into the selection process.

programs. Spanish is the largest non-English component of the program and was used to estimate this effect. Two of the five selected countries were Spanish speaking (Spain and Mexico).

Since autonomy is CDC's ultimate goal for FETPs, the evaluation focused on autonomous programs. Four of the five countries visited (Mexico, The Philippines, Spain, and Thailand) had such programs. We felt that the autonomous programs could provide us with information not only on the FETP training process, but also on its outcome and impact. Because they have been in operation for an extended period of time, these programs were well suited to provide information on the public health usefulness of FETPs and on national and international linkages that have been developed as a result of implementing an FETP. Autonomous FETPs can provide information on shifts and trends in the scope and direction of FETPs, as well as how these relate to evolving host-country needs. Additionally, autonomous FETPs have more trainees with long post-FETP employment histories, permitting a better assessment of the impact of the program on the professional development of trainees.

The two eligible sites in Africa (Uganda and Zimbabwe) are both Public Health Schools Without Walls (PHSWOW) programs and are considered to be in the "building and development" phase. These two programs are somewhat different from the FETPs in having a more academic training model. We included Uganda in the evaluation because we wanted to look at the effect of the more academic orientation of these programs. Our preliminary research indicated that the mix of academic and field components of the program importantly affects the satisfaction of host-country professionals (graduates and others) with the program. Including one of the PHSWOW programs in the evaluation might show whether the different orientation of this training model narrows the gap between available trained health professionals and the priority areas of need for public health expertise in the countries, as compared to the more traditional FETPs. A disadvantage is the possibility that the training delivered may not be comparable to that in the FETPs, because of the academic orientation of the PHSWOW model.

3.2 Instrumentation

Data for this evaluation were collected from FETP directors, host-country Ministry of Health (MOH) officials, other public health workers (provincial and local health officers), university faculty, FETP training staff, and FETP graduates in the five host countries visited. Due to the variety of stakeholders in the FETP, we designed multiple data collection instruments to be completed by different respondent types X FETP Directors, trainers, graduates, trainees, Ministry of Health officials, and other

public health workers. The data collection instruments for this study are summarized in Table 3.1 and copies are located in Appendix B.

In this section, we briefly describe the kinds of instruments that were used in the evaluation study.

Table 3.1 Summary of Instrument Types

Instrument type	Instrument Description
Pre-site visit instruments	Site Visit Interviewee Nomination Form
	FETP Graduate List
	Form C - Self-administered questionnaire for FETP graduates
Archival Data Collection Instruments	Form D.1 - FETP History
	Form D.2 - Networks and linkages
	Form D.3 - Curricular data
Site Visit Interview Instruments	Form A - MOH and other government officials
	Form B - FETP Directors and training staff
	Form E - Focus Group Protocol for use with FETP graduates

Site Visit Interviewee Nomination Form. This form was used to solicit nominations from the FETP directors for potential interviewees in the countries selected for site visits. We requested that the program director identify potential interviewees in each of the respondent-type categories, including MOH and other government officials, FETP training staff, and other key individuals who did not fit into the two proposed categories. Space was provided on this form for contact information on each person nominated.

FETP Graduate List. This form was designed to collect contact information (address, telephone and fax number, and e-mail address) on each of the graduates from the FETP program for each site-visit country. FETP directors of the five site-visit countries were asked to complete this form to provide Battelle with a complete list of graduates. Information from this form was used to contact each of the graduates to mail them the self-administered questionnaire (Form C) described below.

Form A. This was a semi-structured interview instrument for Ministry of Health officials and others in academia or in non-governmental organizations (NGOs) who have had some experience working with the FETP. This data collection tool requested background information on the respondent and his or her involvement with FETP, perceived public health usefulness of the FETP, and facilitators of and barriers to sustainability.

Form B. Form B was a semi-structured interview instrument tailored to FETP training staff. The instrument covered the history and development of the FETP, perceived public health usefulness of the FETP, facilitators of and barriers to sustainability, and linkages among public health professionals in the respondents' own country and with their counterparts in other countries

Form C. This was a self-administered questionnaire for FETP graduates designed to collect information on several aspects of their experience in the training program. The instrument was sent to all of the graduates in each of the five site-visit countries. Form C included both closed-ended and open-ended questions covering employment history, the theoretical and field practice components of the FETP training, the usefulness of tools acquired and skills learned in the program, and professional activity after leaving the FETP.

Forms D.1 through D.3. These forms were tools for archival data collection for information on the history and scope of the FETP program in countries to be visited. Battelle requested that the country's FETP Director complete Form D.1, as it required knowledge of the history of the country's FETP. Form D.1 included questions on establishing the FETP, the process of selection of the FETP consultant, development of curricula, selection of trainees, and characterization (total number of graduates per year, graduate outreach and networking activities, etc.) of FETP participants.

Forms D.2 and D.3 were also sent to the countries' FETP Directors but could have been completed by other FETP administrative staff. Form D.2 included questions on dissemination and networking activities (forging professional contacts). Form D.3 covered general information about the FETP curriculum X both the academic and field work components.

Form E. Form E was a focus group discussion guide for FETP graduates. This instrument included discussion of graduates' expectations of FETP prior to enrolling and the degree to which these had been met, benefits gained from being involved in FETP, and public health usefulness of FETP perceived in terms of their professional development.

3.3 Data Collection

This section describes data collection in connection with this project, including:

- # Preliminary interviews with present and current CDC staff and with host country FETP Directors and in-country consultants to understand the FETP and its objectives,
- # Pilot testing of study instruments with FETP Directors, and
- # On-site data collection in five countries.

The sequence and timing of data collection events is shown in Table 3.2.

Table 3.2 Sequence of data collection activities

Data Collection Activity	Date of Activity
Evaluation protocol development	September 1995 – September 1996
Interviews with CDC staff	January 1996 – February 1996
Consultation at the 1996 FETP Directors’ Meeting	April 1996
Evaluation Project	September 1996 – April 1998
Pilot Tests of Instruments at INCLIN meeting	February 1997
Self-administered questionnaires sent out	September 1997 to February 1998
Site visits conducted	October 1997 to March 1998

3.3.1 Preliminary Interviews with CDC and FETP Staff

Prior to developing the evaluation concept and instruments, we clarified our understanding of what the program was intended to do from the perspective of key stakeholders – CDC staff knowledgeable about the program, CDC consultants to in-country programs, and directors and staff of FETPs. CDC staff were interviewed in Atlanta between October 1996 and January 1997. FETP Directors and CDC consultants were interviewed at the Annual FETP Directors’ Meeting for the FETP held at CDC in April 1996 in Atlanta, Georgia. The names of these individuals are presented in Table 3.3.

These individuals were interviewed by teams of two Battelle staff for about an hour each. Open-ended topic guides were used to structure the interview. The topics discussed included the relationship of the interviewee to the FETP, his or her experience with the program, the perception of what the program was expected to achieve and how it operated, and facilitating factors and barriers affecting implementation. Stakeholder interviewees were also asked what they thought would be a useful product for the evaluation study and how evaluation results could be used.

Table 3.3 Individuals Consulted Regarding Design and Content of the Study Instruments

Name	Respondent Type	Title and Affiliation
Dr. Carlos Alonzo (interviewed 2/1/96)	CDC Consultant	Public Health Advisor, International Branch Division of Epidemiology, Epidemiology Program Office
Dr. Daniel Fishbein (interviewed 1/30/96)	CDC Consultant	Scientific Coordinator, International Branch Division of Epidemiology, Epidemiology Program Office
Dr. Bruce MacLachlan	CDC Consultant	Public Health Advisor, International Branch

Name	Respondent Type	Title and Affiliation
(interviewed 1/31/96)		Division of Epidemiology, Epidemiology Program Office
Dr. Marguerite Pappiounaou (interviewed 2/1/96)	CDC Consultant	Division of Prevention Research & Analytic Methods Epidemiology Program Office
Dr. Victor Cardenas	Program Consultant	Programa de Adiestramiento Avanzado en EpidemiologPa Aplicada Instituto Nacional de Salud - Colombia
Dr. Robert Fontaine	Program Consultant	CDC Consultant, FETP - Preventive Medicine Department Ministry of Health – Kingdom of Saudi Arabia
Dr. Douglas Hatch	Program Consultant	CDC Advisor, Ministry of Health Child Survival Project, USAID, Egypt
Dr. John V. Rullan	Program Consultant	CDC Consultant, Spain FETP
Dr. Mark White	Program Consultant	CDC Consultant, PHSWOW - Uganda
Dr. Fernando de la Hoz	Country Director	Chief, Programa de Adiestramiento Avanzado en EpidemiologPa Aplicada Instituto Nacional de Salud - Colombia
Dr. Jamie Hockin	Country Director	Director, Canadian FETP Laboratory Centre for Disease Control
Dr. Huduyo Hupudio	Country Director	Director, FETP Dit EPIM Dit-Jen PPM&PLP Indonesia
Dr. Pablo Kuri Morales	Country Director	General Directorate of Epidemiology Mexico
Dr. Augusto Lopez	Country Director	Programa de EspecializacPon en EpidemiologPa de Campo Oficina General de EpidemiologPa Ministerio de Salud - Peru
Dr. Kumnuan Ungchusak	Country Director	Director, Thailand FETP Division of Field Epidemiology, Ministry of Public Health
Dr. Denise Werker	Country Director	Future Assistant Director B.C. Centre for Disease Control - Canada
Dr. Salah Al-Awaidi	FETP Graduate	Epidemiologist, Ministry of Health Oman
Dr. Mohammed Saeed Al-Qahtani	FETP Graduate	Saudi Arabia FETP, Preventive Medicine Department Ministry of Health
Dr. Madiha Fathy	FETP Staff Member	Egypt FETP, Ministry of Health, Child Survival Project
Dr. Moharram Khalifa	FETP Staff Member	Egypt FETP, Ministry of Health, Child Survival Project
Dr. Concepcion Rocas	FETP Staff Member	Training Officer, Philippines FETP, Department of Health

All interviews were summarized in a narrative format from interview notes, supported by tape recordings of interviews. The results were used to guide development of the evaluation protocol and instruments.

3.3.2 Pilot Test of Procedures and Instruments

A pilot test of the draft instruments was conducted in February 1997, during an FETP Directors' meeting held in conjunction with the International Clinical Epidemiology Network (INCLIN) Meeting in Panang, Malaysia. Battelle pilot tested the semi-structured interview instruments (Forms A and B), as well as the self-administered survey instrument for the FETP graduates (Form C), with individuals

determined to be in the appropriate category for each instrument. Three Ministry of Health officials were administered Form A, two in English and one in Spanish. Nine present or past FETP Directors were administered Form B (6 in English and 3 in Spanish). The self-administered questionnaire, Form C, was completed by five English-speakers and five Spanish-speakers. In addition, a pilot focus group was also conducted with volunteer FETP trainees and graduates, and Form E (Focus Group Discussion Guide) was developed on the basis of this experience.

These instruments are included in their final form as Appendix C. The archival data collection forms (Forms D.1 through D.3) could not be pilot tested, but Form B respondents were queried as to the availability of such data. The instruments were modified based on the results of this pilot test. Revised instruments were added to an OMB Clearance package and submitted for clearance. CDC received OMB clearance for this study in July 1997.

The pilot test data were not included in our final analyses. Although no steps were taken to prevent duplication of pilot test respondents in the main evaluation study, only four of the persons interviewed in the pilot test were also interviewed during the site visits to their countries.¹

3.3.3 Pre-Site Visit Data Collection

Prior to initiating site visits, the self-administered questionnaires (Form C) were distributed to FETP graduates in the five site visit countries through a series of mass mailings. The cover letter explained the study and requested the graduates' participation. It contained explicit instructions filling out and mailing the survey, and a pre-addressed envelope for returning the completed questionnaire. In both the cover letter and the directions we requested that respondents return their questionnaires within three weeks of their receipt.

In order to maximize the response rates on this self-administered questionnaire, the cover letter was personalized and explained the importance of the survey and the value of the graduates' participation in the study. Both the cover letter and the directions provided in the first mailing indicated the deadline for returning the surveys to Battelle. Reminder letters were faxed and/or e-mailed to those graduates who had not returned the questionnaire by two weeks after the deadline. Additional copies of the questionnaire were provided to those graduates who informed us that they had lost or misplaced them. Originally, we had planned to send out additional copies of the forms to all graduates who had not responded up to this point. Unfortunately, the cost of international delivery was prohibitive, making this

1 Drs. Navarro (Spain), Ungchusak (Thailand), Wabwire-Mangen (Uganda) and Mateo (Philippines) were interviewed during both the pilot test and the site visits to their respective countries.

part of the follow-up plan infeasible. Finally, follow-up calls were made to remaining non-respondents by trained Battelle staff working from prepared scripts. Response rates for Form C are presented in Table 3.4.

Table 3.4 Response Rates for Form C

Site Visit Country	Number of FETP Graduates	Number of Forms Mailed	Number of Forms Undeliverable*	Number of Forms Completed	Response Rate†
Mexico	103‡	101	4	58	60%
Thailand	75‡	71	4	35	52%
Philippines	40‡	34	3	23	68%
Spain	14	14	0	12	86%
Uganda	17	17		8	47%

* Forms were undeliverable because the graduate was no longer at the address listed and could not be reached at the telephone numbers provided on the graduate lists.

† Response rate=number of deliverable forms/number of completed forms.

‡ Two of the names on the graduate list for Mexico did not have addresses associated with them.

Four of the names on the graduate list for Thailand did not have addresses associated with them.

Six of the people on the graduate list for the Philippines did not have addresses associated with them (two “lost contact”, three on study leave, and one no longer living).

Questionnaire packets sent to Spain contained pre-addressed envelopes for shipping the completed questionnaires back to Battelle. Due to regulations on shipping to Thailand, the Philippines, and Mexico, we were not allowed to provide the graduates in these countries with our account number for shipping the completed forms back to Battelle. In order to make the process of returning the questionnaires less burdensome on the graduates, we asked the Directors if the graduates could return their completed surveys to their respective FETP offices and then the FETP administrative staff would send a bulk package of completed questionnaires to Battelle. Packets to the graduates in these countries contained an envelope addressed to each country’s FETP office. For Uganda, all packets were sent to an administrative staff member of the Institute for Public Health who then distributed them to the graduates via an in-country delivery system.

In an effort to compensate the graduates for the postage required to send the completed surveys to their countries’ FETP offices, small gifts (two ink pens) were included in every packet. Unfortunately,

not all of the graduates received their gifts. For unexplained reasons, the delivery service workers in the Philippines removed some of the pens from their packages. Federal shipping regulations did not allow us to send pens in the survey packets to Mexico.

3.3.4 Site Visit Data Collection

Site visits were conducted in Spain, Thailand, the Philippines, Mexico, and Uganda. Semi-structured, open-ended interviews with individuals and groups were the central focus of these visits. Whenever possible, interviews were conducted by teams of at least two people, with one person responsible for asking questions and the other responsible for taking comprehensive field notes, probing for clarifications and additional information, and operating an audio tape recorder. Audio recordings of the interviews were conducted only after verbal consent was obtained from each respondent and were used by the research team only as a backup to field notes. Table 3.5 presents the site visit dates and teams.

Table 3.5 Site Visit Schedule and Teams

Site	Research Team Members	Arrival Date	Departure Date	Days of Interviewing	Total Number of Interviews	Number of Focus Groups
Spain	Claude Betts Carlyn Orians	10/19/97	10/25/97	5	10	1
Thailand	Claude Betts Lowell Sever	11/16/97	11/22/97	5	17	1
Philippines	Lowell Sever Valerie Williams	12/14/97	12/20/97	5	11	1
Mexico	Claude Betts Mary Odell Butler	1/18/97	1/23/97	5	8	3*
Uganda	Claude Betts	3/15/98	3/20/98	5	15	2 [†]

* One with current residents, one with FETP graduates and one with FETP trainers.

[†] One with PHSWOW graduates and one with first and second year trainees.

Battelle contacted the FETP Directors in the five countries to determine the best time for a site visit. FETP Directors had some general information about interviewees' schedules and when they would

be available. Once the site visit dates were agreed upon, two different methods were used to schedule the site-visit interviews. Interviews in Thailand and the Philippines were scheduled by Battelle staff prior to the site visit. Because interviewees in these countries spoke English and had fax numbers and Internet addresses where they could be contacted, Battelle was able to arrange the interviews fairly easily. In Spain, Mexico, and Uganda interviews with those interviewees on the nomination forms were set up in advance by the FETP Directors and/or administrative staff. Language barriers and communication difficulties (e.g., time differences, loss of contact with Uganda for several weeks when telephone lines went down) precluded Battelle from scheduling these interviews on our own.

In all countries visited, focus groups were set up by the FETP Directors and/or FETP administrative staff. One focus group was conducted in Spain, Thailand, and the Philippines respectively, while two were conducted in Uganda and three in Mexico. Focus groups ranged in size from five to ten participants and represented convenience samples of the total universe of FETP graduates in each country. The groups were comprised of participants who were accessible and available during the specified group meeting time, thus limiting the participants to those who were working or visiting in or near the FETP offices.

While in the field, Battelle researchers were able to collect completed D forms from the FETP Directors and any completed C forms that had been received from the graduates. During this time, the research team also obtained relevant program documents.

3.4 Data Processing and Analysis

Analysis and report writing were carried out using data from the study instruments described in the previous section. In addition, members of the research team reviewed relevant program documents collected during the site visits. This report was reviewed by the entire research team for accuracy, clarity, and continuity and to ensure good coverage of examples from all sites. The findings from this evaluation are thus based on a process of synthesis and review carried out by the entire research team.

The research and study questions described in Chapter 2 were used to organize data processing, data analysis, and report writing for this evaluation. Each research question and each study question was assigned an analysis code, and that code was in turn assigned to appropriate data items or text segments of the interview data. These data were sorted by analysis code, reviewed, and summarized prior to report writing. This section describes (1) the development of the respondent database; (2) the creation of

summary analysis tables for data from Forms D.1, D.2, D.3, and C; and (3) the use of a qualitative data analysis software package (The Ethnograph®) for all site visit data.

3.4.1 Design of a Respondent Database System

A respondent database was developed for this study using Microsoft Access® in order to provide the Battelle research teams with relevant information on each respondent. This database was also used to track the progress of data collection and to document the logistics of interview scheduling. Information on the FETP Directors, potential interviewees nominated by the Directors, and individual FETP graduates in the five countries selected for site visits were entered into this database. The database contained each respondent's name, title, position, institutional affiliation, address, telephone numbers, and other contact information, as well as whether the person was interviewed during a site visit, whether thank-you letters were sent, and whether survey responses were received. Information on data collection follow-up was also included in this database and was used to track the follow-up process and to document follow-up efforts.

As part of this database, we created respondent identification codes that were used in the data processing and analysis phases of this study. These codes were comprised of three separate fields: (1) a unique number for each respondent (001, 002, etc.), (2) a two-letter code for the site-visit country (ME=Mexico, TH=Thailand, PH=the Philippines, etc.), and (3) a numeric code for respondent type (1=MOH official, 2=FETP training staff, 3=FETP graduate, 4="other"). Each response to every question on the data collection instruments was linked to the appropriate respondent identification code during data entry, processing, and analysis.

3.4.2 Data Processing and Analysis for Structured Data (Forms C and D)

Closed-ended data collected using the self-administered Form C was entered directly into a Microsoft Excel® spreadsheet. The variable names and codes used in this spreadsheet were developed using the questions from Form C. See Appendix E.1 for the Form C closed-ended data codebook. Once entered into the spreadsheet and checked (10% random check of all data entered), these data were read into the statistical analysis software SAS® for cleaning and analysis. Data were cleaned (illegal codes were detected and corrected) while performing exploratory data analyses on all of the variables of interest. Descriptive statistics were then generated for key variables, indicators were calculated, and cross-site tables were constructed to present the data in summary form.

Open-ended data from Form C were entered directly into cross-site data tables, checked, cleaned, and coded. These cross-site tables were created for each open-ended question included in this instrument. The tables were formatted simply, with the topics of the questions as table headers and a column for the unique respondent identification number. Each individual response was entered into a separate row in the table, along with the respondent's identification number. This allowed those doing data analysis to know which respondent type provided the answer and from which FETP host country. This system for cross-site tables for each open-ended question allowed members of the research team to note the range of responses to a specific question in order to facilitate comprehensive cross-site comparison of the data. The use of separate columns for the codes and the respondent identification numbers also allowed researchers to electronically sort the responses in the tables according to the codes and the identification numbers. Much of the processed data included in these cross-site analysis tables are either included in the findings sections of this report or can be found in Appendix C.

The completed Forms D1, D2, and D3 were received from the respondents in hard copy form. Data processing for these forms involved entering both the closed- and open-ended responses into cross-site data tables and proofreading the respondents' text. These cross-site tables were created for each question included in these instruments and were formatted with the topics of the questions as table headers and a column for the unique respondent identification number. Each individual response was entered into a separate row or cell in the table. The simple format of the data collection tables greatly facilitated the cross-site analysis of the information obtained from these forms.

3.4.3 Data Processing and Analysis for Unstructured Data (Forms A, B, and E)

The site visit instruments used in this evaluation were semi-structured, open-ended interviews targeted to the specific respondent types (FETP Directors and trainers, graduates, and MOH officials). Open-ended, semi-structured interviews allow more freedom in the length and content of responses for both the respondent and the interviewer than do more structured forms of data collection. Respondents are allowed to answer specific questions at length, covering in their own words the issues that are important to them. The interviewer is provided with an outline for addressing an established set of study questions while also being able to react to the respondents' answers by probing on topics, themes, or ideas that emerge during the course of the interview. This type of interview process combines a descriptive approach (through which answers to specific questions are sought) and an exploratory approach (through which new, important, and perhaps unexpected ideas and issues can be discovered). Because of the less-

structured nature of the data obtained from such interviews, data processing for the interview data was carried out differently than for the data from the written survey instruments. Test data from the respondents' answers to the interview questions and probes were analyzed in order to answer the relevant research questions.

For each interview conducted during a site visit, a transcript was developed based on hand-written notes taken during the interview and an audio tape recording of that interview. During every interview, one researcher was given primary responsibility for taking comprehensive notes. Upon return from the field, the researcher responsible for the field notes typed the notes for each interview into an electronic word processing template. The name for each of these data files was the respondent identification code for the person interviewed. For any interviews not set up in advance of the site visit, the respondent's personal information was later entered into the respondent database and then assigned a respondent identification code. The data files were then checked for accuracy by the other researcher present during the interviews. This process allowed the verification of the information and the clarification of unclear points. The audio tape recordings of the interviews were used only to fill in information missing from the field notes or for clarification.

Once reviewed and clarified, the interview transcripts were then imported as data files into the qualitative data analysis software The Ethnograph®. Using this software, a content analysis of the interview transcripts was carried out. The Ethnograph® enabled us to assign code words to individual segments of interview text that represent discrete responses to interview questions and probes, as well as to other meaningful text segments related to new, emergent topics and issues. The code words are linked directly to the questions in the interview guides, which are in turn linked to the research and study questions. Appendix E.2 contains the qualitative data codebook containing the codes, their definitions, and their relationships to the research and study questions.

When all of the interview data files were coded, the software allowed us to identify and collate related text segments within and across all of the interview data files. The coded text segments can be grouped in multiple ways, for example, by site or respondent type. By grouping coded text segments we could compare respondents' answers to the same questions while observing the patterns of emerging issues and the extent to which these patterns apply to various types of respondents (e.g., all respondents of a specific type regardless of site, or all respondents types from just one site). In this way, the interview data were used to develop the findings sections of this report.

3.5 Methodological Limitations of this Study

Prior to the presentation of the results, we consider potential limitations in the data collection methodology that could bias the conclusions that we have drawn from the data. We see several limitations to this study that should be taken into account in the interpretation of the findings.

Site selection. The use of the site selection criteria, discussed in Section 3.1 of this chapter, limits the generalizability of the results to the FETP countries not included in this study. For example, we did not include programs no longer producing trainees. Therefore, we cannot assess reasons why autonomous FETPs in some countries have continued producing trainees while others have stopped. The selection of Uganda also introduces potential bias because this country was known *a priori* to differ significantly from traditional FETPs in training methodology.

The FETP countries visited may not be representative of all host countries. We can only be confident that the data collected during each site visit are relevant to that particular host country. However, the limitations based on the site selection process do not mean that lessons learned in the countries visited will not be useful to other FETPs. Contextual factors in each of the individual countries should be considered when applying the results of this evaluation.

Data collection. Another potential limitation of this research is the fact that more data were collected from some FETPs than others because response rates on the different forms varied. Importantly, we were unable to interview training staff during our site visit to the Philippines because these individuals were unavailable at the time of the visit.

The instruments used for data collection from the FETPs may have been less relevant to the PHSWOW program. Although we made efforts to obtain feedback on the data collection tools in advance of the site visit to Uganda, we were able to tailor only the archival data collection forms to this program. We received no feedback on the relevance or appropriateness of the graduate self-administered questionnaire to the PHSWOW. If this questionnaire is not relevant to the curriculum of the PHSWOW program then this will affect the validity and reliability of our interpretations.

The information presented in this report represents the findings of an evaluation of the FETP programs as a whole, not a “performance check” of the individual FETPs. The examples presented in the following chapters do not represent comprehensive lists of accomplishments of or recommendations for all of the FETPs, but are highlighted to support specific findings. Thus, it should be noted that a lack of information on the operation and/or activities of any given FETP does not represent a lack of accomplishment on the part of that program.

4.0 Program Recruitment and Development

In this chapter we examine the process of program recruitment and development using data collected from interviews conducted at the 1996 FETP Directors' Meeting and during the site visits and the self-administered survey of FETP/PHSWOW graduates. We address the following aspects of program recruitment and development: (1) how and why interest in the program was generated in the existing FETP countries, (2) the steps that led from initial interest to the establishment of an FETP, (3) how countries customized the program to fit their needs, and (4) whether participating countries feel satisfied with how their respective FETPs were established. We conclude with recommendations for ways to improve the program recruitment and development process.

4.1 Procedures for the Establishment of FETPs

The current criteria for establishing an FETP are the result of an almost 20-year evolutionary process. It has varied somewhat over this time. However, generally FETPs are brought into being in six stages: (1) contact and initial negotiation, (2) feasibility assessment, (3) securing funding for and commitment to FETP, (4) hiring a full-time consultant, (5) designing the curricula, and (6) recruiting and selecting trainees.

Discussions of the first five stages of FETP establishment are based on data collected from interviews conducted at the 1996 FETP Directors' Meeting and during the site visits. The discussion of trainee recruitment and selection draws on data collected from these interviews as well as from responses obtained from the survey of graduates.

4.1.1 Contact and Initial Negotiation

Recruitment of the early FETPs was generally initiated after the host country requested some type of CDC technical assistance. Many of the early programs grew out of USAID requests for assistance. More recently, however, countries have approached the CDC directly about the FETP. Most countries requested FETPs either because they had: (1) visited CDC and someone at CDC sparked their interest in the program, (2) heard about the program from individuals who have an FETP in their own country or are

familiar with an operating FETP, or (3) heard of the EIS program and asked CDC how they could get their own program started.

CDC usually responded to these requests by initiating a dialog about the benefits of developing an in-county cadre of field epidemiologists. Some countries stopped pursuing the idea of establishing an FETP when they learned that it was not a short-term program.

Four of the countries that were visited as part of this study were selected because the FETP had been established well enough so that a successful transition to autonomous status had occurred (Mexico, the Philippines, Spain, and Thailand). Looking back to the early days of these four programs, it is striking that each of them had strong backing from one of several leaders in the health sectors of their respective countries. This firm commitment to the concept of the FETP on the part of key officials continued into the implementation phase, even after the in-country founders of the FETP moved on to other things. In most cases, these individuals remained interested enough in the FETP to talk to us about it several years after their direct involvement with the program ended.

Initiation of the FETP in four of the countries visited resulted from a realization on the part of these key people that the country lacked a solid knowledge and manpower base in applied/field epidemiology. In Thailand, for example, physicians recognized that there was little epidemiological knowledge and a lack of understanding of the etiology of disease at the local level. At that time, the Thai health authorities relied heavily on MOH officials and WHO for solutions to public health problems, rather than having trained professionals with knowledge of the local context available to address these problems. Once this lack of knowledge was recognized, Thai MOH officials sought the advice of WHO and the CDC.

In Spain, failure to take timely and effective steps in the investigation of a toxic oil epidemic followed by a delay in the identification of a very serious pulmonary illness highlighted the need for training in applied epidemiology. These experiences illustrated that while Spain was very well developed in terms of clinical work and academic epidemiology, applied epidemiology lagged behind. Once recognized, this need for training in applied epidemiology was brought before the authorities of the Institute of Health Carlos III and the Ministry along with a proposal for the development of a program based on the EIS model. CDC representatives then traveled to Spain to assess the feasibility of developing an FETP. Initially, there was some resistance from the autonomous communities (county level). The necessary support for the program was obtained after two national figures/leaders in public health gave a presentation introducing the FETP program as a way to address Spain's training needs.

In the Philippines, the Research Institute for Tropical Medicine was working to develop field studies of diarrheal diseases so that clinical training could be augmented by applied work. There was very little epidemiology training to be found at that time so the director of the Institute contacted USAID

for assistance in developing a training program that would satisfy this need. The Institute was then referred to CDC through USAID.

The initiation of the Programa de Epidemiología Aplicada (PEA) in Mexico was catalyzed by a visit from a technical consultant from CDC to discuss the training of epidemiologists. At that time, there were no epidemiologists available at the state level to investigate disease outbreaks. Every outbreak had to be studied by people from the central level. The technical assistance offered by the CDC technical consultant formed the basis of the FETP in Mexico.

4.1.2 Feasibility Assessment

During the establishment of the early programs, CDC worked with host countries to secure funds and personnel for the sites. The newer programs have emerged from more extensive consultations and the use of more formal assessment protocols and terms of agreement (Music and Schultz 1990). As part of establishing the newer programs, CDC professional staff conduct brief “country trips” in order to assess the feasibility of setting up the training programs in those countries. During these trips, CDC staff interview public health officials and explain the program, the requirements for implementation, and the expectations of the CDC. In turn, the public health officials state their needs and expectations. The CDC assessors also visit universities that are recommended by the country’s MOH and any other key stakeholders identified during the initial interviews in order to determine the country’s needs and expectations.

An assessment outline has been developed by CDC and describes objectives and activities to be undertaken in order to develop a detailed country plan for an FETP. The main assessment objectives listed in the outline focus on determining (1) whether there is truly a need for an FETP, (2) whether the country is committed to establishing an FETP, (3) what the program would look like, and (4) possible sources and mechanisms of funding. Intermediate assessment objectives include learning about the host-country’s national public health system (organization and operation), technical infrastructure (technology and equipment use, communications, laboratories, and transportation), educational system, and non-university epidemiology training efforts. An additional intermediate objective is to assess the local interests of other organizations such as WHO, UNICEF, UNDP, World Bank, USAID, and other NGOs. The final portion of the outline is comprised of an exhaustive list of organizations and individuals who could contribute to CDC’s understanding of a particular country’s public health system, educational system, non-university training activities, and technical infrastructure. Those who can articulate the local interests of non-governmental and donor agencies also appear on this list of contacts. These contacts

represent all of the persons/organizations that should be visited by the CDC assessors during the country trip.

Before completion of the trip, the CDC assessors make a presentation and prepare a report for the country that outlines the findings of the assessment. If the establishment of an FETP seems feasible, the report also maps out an approach to establishing an FETP in that country. This document is referred to as a “country plan” and is developed according to a standardized format that is quite detailed in its specifications.

4.1.3 Securing Funding for and Commitment to FETP

CDC works with the countries to develop a financial plan for a program that will fit their own national public health needs. In the process of developing the country’s financial plan, CDC reviews the feasibility assessment, works to identify funding for the countries, develops budgets, and provides some technical expertise to local sites. The financial plan also incorporates lessons learned from previous work of the CDC and other FETPs. Once a plan is developed, CDC and the host governments work together to secure the necessary funding from ministries of health, academic institutions, donor agencies, and other national and international partners.

Start-up and recurrent costs are the two financial requirements for establishing and maintaining an FETP. Each FETP has obtained funding for their start-up costs from a unique set of sources. The salary of the CDC in-country consultant is usually provided by a source other than the CDC. Once several classes have graduated from an FETP and the program has trained some of its graduates to be supervisors, the CDC consultant is generally withdrawn, leaving only the need to support the recurrent costs. (Music and Schultz 1990).

The establishment of programs in countries with low-income economies has required the financial support of an international donor, most often the U.S. Agency for International Development (USAID) and the World Health Organization (WHO), the World Bank, and the Pan-American Health Organization (PAHO). The Rockefeller Foundation has played a key role in the establishment of a new type of field training program, “Public Health Schools Without Walls” (PHSWOW). One program in a country with a middle-income economy (Colombia) and all the FETPs in countries with relatively high-income economies have been established solely with national funds (Holt and Fishbein 1996).

Spain experienced funding difficulties during the start-up of its FETP. A contract was drawn up between CDC and the Institute which stated that Johns Hopkins University would pay for the consultant and an overhead fee. One respondent expressed concern that the initial overhead rate proposed was too high. Negotiations between the two parties eventually brought the rate down by six percent. Even with

the reduced rate, the host-country found the agreement very expensive. We were told that if Spain had not already committed to the program they might have dropped out at that time.

It was also difficult for Spain to make money available to the FETP trainees for field outbreak investigations because the trainees were not employees of the Institute - their salaries were paid by the communities. In order to cover the trainees' field expenses, the Institute had to set up access to an "investigation fund" that trainees could apply to for grants. One respondent indicated that without this fund, the field portion of the program would not have been possible.

All parties involved in setting up the program must commit to the FETP. The MOHs need to make a commitment to fully support the program by institutionalizing FETPs within the ministries, providing adequate salaries for the trainees, and by establishing a career ladder for suitable graduates of the program. The MOHs usually also agree to provide office space, permanent local support staff, and a FETP director to run the program once it is autonomous (Holt and Fishbein 1996).

4.1.4 Hiring of the CDC Consultant

After they are solicited and secured, funds are used to cover the operating costs of the program and to hire a long-term CDC consultant. This consultant lives in the host country, advising local FETP staff on matters related to curriculum content and development and serving as the CDC's main representative abroad. While the CDC encourages the countries to contact the CDC directly, the long-term consultant often acts as the principal line of communication between the host country and the CDC in Atlanta.

The way in which the CDC consultant was selected varied across the four FETP countries visited. In Thailand and Mexico, CDC chose the full-time consultant with little or no input from the host-country MOH.

The MOHs in Spain and the Philippines had more input into the selection of the full-time consultant. In the case of the Philippines, CDC announced the position and the leading candidate visited the Department of Health and was interviewed by key stakeholders (senior staff from the Institute for Tropical Medicine and from the DOH) in the host country. After interviewing the candidate, the DOH approved the nominee for the position and CDC offered the candidate the job.

In Spain, public health authorities selected the candidate from a list of EIS officers supplied by the CDC. A host-country committee was created to evaluate the resumes of each of the candidates on the list. The first person chosen for the consultant position cancelled plans to take the post at the last minute. Those on the selection committee then had a short period of time in which to select another candidate. The committee reviewed the remaining candidates and nominated a second person for the consultant

position. The director mentioned that certain characteristics were important when considering the candidates. One of these was language. The first choice was a North American who spoke Spanish and the second choice was a Latino.

Overall, FETP directors from three of the countries visited reported that they were satisfied with the amount of input their MOHs had in the selection of the long-term consultant. The Thai MOH showed their support of CDC's choice by providing the consultant with office facilities and logistical support including auxiliary staff. This showed the MOH's commitment to the program and led to a sense of ownership of the FETP. The program manager of the Philippine FETP commented that their face-to-face encounter with the candidate was crucial in terms of their satisfaction with the consultant selection process.

4.1.5 Designing Curricula

The process of curriculum development varied across the countries visited. The Thai MOH did not have much input into the curriculum development process. The CDC consultant took the lead in designing the curriculum but worked in conjunction with a curriculum working group to develop the draft plan. The CDC consultant, MOH officials and staff from the School of Public Health comprised the working group at the time of start-up. The CDC consultant to Thailand's program held primary technical authority in the decision-making process pertaining to the development of the curriculum at the time of start-up. Once the draft curriculum was developed, a committee set up by the MOH reviewed and approved it.

In Spain, the CDC consultant and the national program director shared the technical authority in the decision-making process related to curriculum development. At the time of start-up, the Minister of Health had delegated the development of the program curriculum to those persons he felt were the most "nationally responsible," at the same time giving his full support to the program. The consultant worked closely with these individuals — the country director, the general subdirector of epidemiology and the center director — to develop the program objectives and the day-to-day course plans and to adapt the CDC materials to Spain's needs. Although this was a team effort, one respondent pointed out that the ultimate responsibility for this process rested with the National Center for Epidemiology.

In the Philippines, the MOH had a high level of input and held primary technical authority in the decision-making process in terms of curriculum design. The MOH "knew what it wanted" and relied on the long-term consultant for technical support in adapting CDC materials to the Philippine curriculum and in developing the first drafts of the training schedules. The CDC consultant also prepared the first drafts

of learning objectives, class content, and schedules. The country director and consultant worked very closely together, brainstorming about the curriculum.

In Mexico, the CDC consultant worked with the MOH to adapt the study plan to the needs of the country. One respondent noted that in the beginning, the program was very tightly directed by CDC and that later it became more attuned to the needs and politics of Mexico.

4.1.6 Recruitment and Selection of Trainees

Curriculum design is followed by the recruitment and initiation of the first training class. Table 4.2 presents the date the first class was selected and the date the first class graduated for each of the countries visited.

Table 4.1 Date First Trainee Class Was Selected and Date First Class Graduated

Site Visit Country	Date first class selected	Date first class graduated
Thailand	1980	1982
The Philippines	1987	1989
Mexico	1984	1986
Spain	1993	1996
Uganda	1994	1996

Source: Form D.1

Our assessment of the trainee selection process includes the use of survey data collected from the universe of FETP/PHSWOW graduates on their experiences with regard to the trainee selection process in their respective countries. Respondents to the form C survey are described by education, age, and gender in Table 4.3.

One-hundred and thirty five graduates from five FETP/PHSWOW countries responded to our questionnaire. Only one respondent reported not having completed the training program. One hundred and twenty-five (93%) of the respondents hold an MD degree. Forty-seven graduates (36%) hold an MD degree only. Forty-eight respondents (36%) hold both an MD and an MPH. The remainder hold some other advanced degree. Respondents are equally distributed in terms of gender across all five

Table 4.2 Summary Background Information Obtained from FETP Graduates

Site Visit Country	Response Rate			Advanced Degrees					Mean Age	Gender	
	Number of surveys sent	Number of Responses	Response rate	MD Only	MD/ MPH	MD/Other advanced degree†	MPH, No MD†	Other advanced degree		Female	Male
Mexico*	101	58	60%	17	18	18	1	3	39	30	28
Thailand	71	35	52%	7	22	6			38	12	23
Philippines	34	23	68%	16	3	3		1	38	15	8
Spain	14	12	86%	7	1	3	1		40	7	5
Uganda	17	8	47%		5		3		35	3	5
Total	237	136		47	49	30	5	4		67	69
%				35%	36%	22%	4%	3%		49%	51%

* One response to this question was missing for Mexico.

† This category included the following types of degrees and specialties: Doctor of Philosophy (7), Bachelors in Veterinary Medicine (5), Bachelors of Science (5), Masters in Hospital Administration (2), Masters of Science (6), Doctor of Public Health (1), Management and Administration (5), epidemiology (13), public health (3), internal medicine (2), occupational health (1), pediatrics(1), health services management (1), MBCHB (1), BDS (1), and ADHSM (1).

countries, but an excess number of males responded from Thailand and an excess number of females from the Philippines. The respondent samples from the first four countries visited are very similar in terms of mean age. Respondents from Uganda, the newest of the five programs, are the youngest group of graduates.

The manner in which respondents learned about the FETP/PHSWOW was similar across the five countries visited. Table 4.4 presents information on how the graduates in our study found out about the training program. Most of the graduates (55%) learned of the training program through their employers. Other respondents learned about the program through publications (10%) and friends or colleagues (11%).

Table 4.3 Ways Respondents Learned about the FETP/PHSWOW

Site Visit Country	<i>n</i>	How the graduates found out about the FETP/PHSWOW					
		Employer	local university	publication	from a friend or colleague	from FETP staff or trainees	other*
Mexico	58	42	1	3	6	1	5
Thailand	35	10	1	8	3	4	9
The Philippines	23	12		1	5	5	
Spain	12	11					1
Uganda	8	3	1	2	1		1
Total	136	78	3	14	15	10	16
%		57%	2%	10%	11%	7%	12%

Source: Form C

* This category includes the following types of responses: from a flyer (3), from the Secretary of Health (2), from the MOH (4), from a teacher or mentor (4), from the national health system (1), from program training (1), and from meetings (1).

The FETPs in the countries we visited have unique trainee selection processes that have evolved over time. In these countries, CDC had little or no direct input into the decision-making process pertaining to the selection of FETP at the time of start-up other than input through the CDC consultant. While standard sets of procedures for trainee selection are in place in several of the countries visited, in some of these countries this process is sometimes unnecessary because the number of applicants is often equal to the number of spaces available.

At the time of start-up, trainees in the Mexico FETP were nominated from the Dirección General de Epidemiología (DGE) and State Health Departments. At that time, residents were not all MDs. Beginning in 1992, epidemiology became a part of the national medical system, and the selection of residents came under the control of the National Residency Examination, given every year for all general medicine graduates who want to go into a specialized residency. Now, most of the applicants are physicians and they must apply to UNAM for a medical residency program, indicating their interest in applied epidemiology. The main criterion for acceptance into the program is an individual's score on the national examination. The examination process identifies the most qualified candidates, who are then sent to the DGE or the IMSS for further screening.

Finalists are interviewed by the FETP Director and other program staff. One interview covers a general understanding of epidemiology and one an understanding of how DGE is oriented to do epidemiology. Work history as well as experience with and attitude towards working in teams are also considered. Other criteria used to select trainees include an evaluation of the individual's ability to dedicate himself/herself full-time to the program as well as his/her state of health. The DGE has two additional vacancies set aside. In order to allow for the participation of non-physician and/or outside candidates in the FETP. Currently, one of these additional vacancies has been awarded to a candidate from Cuba.

In Thailand, the national program director is now in charge of the trainee recruitment and selection process. A trainee selection committee was created by the MOPH and is chaired by the Director of the Division of Epidemiology with the national FETP director as committee secretary. All staff, including senior staff from this division, have served as committee members. Most of the members of the Thai trainee selection committee are trainers.

All applicants in Thailand apply through the Thai Medical Council which has approved the Thai FETP as a training institute qualified to train epidemiologists. At the time of start-up, selection of participants for the Thai FETP was done by written examination. Now, only an oral interview is required. The selection is based on a quota from the Council.

Respondents in Thailand felt that trainees should have a stronger background in public health with some prior training in epidemiology. There was some disagreement in Thailand as to whether or not the program should recruit non-MDs. Some feel that the program should only admit MDs because they have the recognition and respect of others. Others feel that because a large number of epidemiologists are needed all over Thailand, non-MDs should be actively recruited to satisfy this need. Several respondents

noted, however, that there is currently a lack of financial or career incentives for people to enter the program.

In the Philippines, the trainee selection process is based on the collective decision of a trainee selection board that is created by the MOH, and includes MOH directors, academics, and the national FETP program director and/or training officer. The FETP nominates MOH directors for the board who represent what are anticipated to be service areas. Academicians are included as members so they may lend their expertise and credibility to the training program. There is no formal application process for potential trainee selection board members. The national program manager nominates individuals for the trainee selection board, and the Secretary of Health decides whether to approve each of the nominations.

In Spain, at the time of start-up, the trainees were selected by the national program director and the CDC consultant. Because the program is designed to strengthen the regional epidemiologic services, the regional health authorities (Regionales de Vigilancia Epidemiologica) now form the selection committee and thus play a primary role in the trainee selection process. The criteria for selection of committee members are based on direct responsibility in the development of the program and on institutional, technical, and political-administrative representation.

At present, the formal trainee application process in Spain consists of the regional services selecting the candidates and then formally inviting those candidates to apply. Each is then notified of his/her acceptance and invited to attend the annual Programa Aplicada de Campo (PEAC) meeting. The successful candidates' attendance at this meeting allows the health authorities and program director the opportunity to meet with them. Graduates from four of the five countries visited reported having been interviewed as part of the trainee selection process. Table 4.5 presents information on the number of graduates who were interviewed as part of the trainee selection process and by whom. All of the graduate respondents from the Mexican and Philippine programs reported having been interviewed. All but two of the graduate respondents from Thailand reported that they had been interviewed. The greatest percentage of trainees (65%) were interviewed by some combination of MOH, CDC, and FETP staff indicating that the responsibility for the interview portion of the trainee selection process is shared by these parties.

Table 4.4 Number of Graduates Interviewed and Who Interviewed Them

Site Visit Country	<i>n</i>	Number of graduates who were interviewed	Interviewed by:			
			MOH only	CDC only	FETP staff only	Other*
Mexico†	58	58	11		15	24

Thailand	35	33			13	20
The Philippines	23	23				23
Spain	12	6				6
Uganda	8	0	-	-	-	-
Total	136	120	11	1	28	73
%		89%	9%	0.9%	25%	65%

* This category includes the following types of responses: CDC and MOH; MOH and FETP staff; CDC and FETP staff; CDC and “other”; FETP staff and “other”; CDC, MOH, and FETP staff; MOH, FETP staff and “other”; and CDC, MOH, FETP staff, and “other.”

† Eight graduates of the Mexico FETP did not report who interviewed them.

4.1.7 Expectations of Trainees

Not all participants in the FETP enter the program with clear ideas about what the training will involve or what it will prepare them to do. Most had some sense that the program would involve learning by doing and would be accompanied by direct experience outside of the conventional academic setting. CDC’s involvement in the program was a motivator cited by several participants.

Most also recognized that they would be acquiring tools — such as the processing and interpreting of data — that could be applied to public health work, which would offer them opportunities beyond the curative, medical model to prevent and control disease in community populations. Often a personal experience served as a catalyst. For example, one participant shifted from a clinical focus in obstetrics to a preventive focus after hearing of the FETP from a colleague. Another joined after experience with a cholera outbreak. And for still another, the overwhelming picture of unnecessary suffering observed daily in a community hospital led to recognition of the need for broad-based public health efforts to prevent and control disease.

Several respondents finished previous educational experiences feeling they still had a lot to learn or were looking for broader arenas of action. A Spanish focus group participant viewed the FETP as a way to “formalize through a concrete program many of the pieces I had picked up over time.” Some came with relatively ambitious goals: one respondent entered the program hoping to learn “the breadth of public health,” another wanted to know “how to direct human resources to improve the health of the population,” and yet another hoped to obtain “the seed of public health and epidemiology.” Others had more specific goals in view: a respondent from the Philippines, formerly a municipal health officer, was bothered by the fact that there were often no real recognized actions undertaken after outbreak

investigations to prevent future outbreaks and hoped FETP training might help her/him to change this situation.

A number of our respondents spoke of being ready for something new and different - one was “bogged down” in a job at the time and was looking for travel and research opportunities, while another embarked upon the program as “a process of discovery” with little prior knowledge of what it entailed. Becoming “quicker at making decisions” was a motivation cited by one Spanish focus group participant, and another Spanish participant wanted to “see if I was doing things the best way or if there were better ways.”

4.2 Recommendations

In both the interviews and the self-administered questionnaires, respondents suggested several ways in which the process of establishing an FETP and recruiting trainees might be improved upon. There was a consensus among respondents that there needs to be more collaboration between CDC and the host country in developing the program. Respondents describe CDC’s role as collaborative, assisting the host country in maintaining quality, serving as a standard of reference, and helping the program develop the basis for inclusion in the international epidemiologic network. Respondents report that health workers in the host countries appreciate advice and assistance, but like to be the final decision-makers. Because they are key stakeholders, they would like to play a greater role in the program development process.

Only one recommendation was made in regard to improving the curriculum development process — that an external evaluation group comprised of people familiar with epidemiology and public health would be helpful in identifying areas in which the curriculum is weak and where it could be strengthened.

One way to increase the commitment of Ministries of Health to the FETP might be to broaden participation in the selection process by inviting directors of various Ministry of Health departments to sit on selection committees. This would also encourage directors to nominate trainees from their own departments.

Trainee selection is a difficult area because many countries do not have many applicants from which to choose. One main recommendation for improving the trainee selection process is to generate more interest in the program so that there is a larger pool of applicants from which to choose. Countries that have difficulty in filling trainee slots could pursue more active recruitment by advertising through schools of public health and through provincial and regional public health agencies and facilities.

5.0 Quality of Training

One of the objectives of this evaluation is to assess the quality of both the class work and field work components of FETP training. In this chapter, we examine: (1) the content of the class work and field work components, (2) the balance between these two components, (3) the impact of the FETP program on trainees, and (4) contextual factors that influence the ability of trainees to derive benefit from FETP training. We conclude with recommendations for ways to improve the quality of FETP training. Throughout this chapter, we draw on data collected from interviews with FETP graduates and trainers, from archival data collection forms completed by program directors, and from graduates' responses to a self-administered questionnaire.

5.1 Content of Class Work and Field Work Training in the Site Visit Countries

The main objective of an FETP is to promote the professional development of applied epidemiologists who can practically apply epidemiologic methods to a variety of public health problems in their respective countries. FETPs go beyond merely providing training in applied epidemiology — they are designed to develop the public health capabilities and infrastructure of the host country. In order for the program to achieve this goal, trainees need to develop a range of skills in three critical areas: epidemiologic method and theory, communication of information to colleagues and public officials, and professional skills needed to participate in the national and international public health community. FETP trainees are provided with the opportunity to develop these skills through both core (required) and supplemental (optional) learning activities. All of the training programs included in this study are two years in length and require that the trainees attend the program full time during the training period.

5.1.1 Content of the Class Work Component

Table 5.1 presents information from the survey of graduates on the content areas covered in the class work components of the training programs. These data illustrate that the core areas of

Table 5.1 Content of the Class Work Component of FETP/PHSWOW Training

Site Visit Country	<i>n</i>	Epidemiological concepts and methods	Qualitative methods	Research design	Understanding health services delivery systems	Public health planning & evaluation	Health economics, budgeting, & health care financing	Presenting/ communicating epidemiological information	Other†
Mexico	58	58 100%	49 84%	20* 36%	52* 93%	18* 33%	5* 9%	38* 70%	17 29%
Thailand	35	35 100%	32 91%	25* 76%	35 100%	19* 56%	18 51%	12 34%	8 23%
The Philippines	23	23 100%	21 91%	15* 71%	23 100%	10* 45%	5* 24%	11* 55%	0 0%
Spain	12	12 100%	4 33%	8 67%	12 100%	11 92%	11 92%	4* 40%	2 17%
Uganda ¹	8	8 100%	8 100%	8 100%	8 100%	8 100%	8 100%	8 100%	7 88%

Source: Form C

* One or more responses to this question were missing for this country.

† This category includes the following types of responses: occupational and environmental health (8), statistics/biostatistics (5), computer skills (4), management and leadership training (3), nutrition (3), demography (2), primary health care (2), MCH (2), behavioral science (1), health promotion (1), mental health (1), resolving administrative problems (1), and nosocomial infection (1).

¹ The very low number of graduates of the Uganda program and the recentness of their training must be considered in the interpretation of these data.

epidemiological concepts, tools, and methods are being addressed in the class work components of all five programs. All categories listed had at least some responses indicating that all five programs are covering, at least to some extent, each of the content areas. Practically all of the respondents (greater than 92%) in the five countries visited reported that epidemiological concepts, tools and methods, prevention and control of specific diseases, and understanding health services delivery systems were included in the didactic portion of their training. Management skills, such as planning, evaluation, and health care financing were less consistently reported by graduates. The relatively low number of graduates recalling training in communication and dissemination skills is also noteworthy.

Most of the graduates (greater than 84%) in our sample from the Mexico, Thailand, and the Philippines indicated that qualitative methods were covered in the class work portion of their training. Only 33 percent of the graduate respondents from the Spanish FETP reported that this content area was covered in the class work component of this country's program. Greater than 67 percent of the FETP graduates in our sample from Thailand, the Philippines, and Spain reported that research design was included in their curricula. Only 33 percent of graduate respondents from the Mexican program indicated that the class work portion of their training included this content area. The Spanish FETP appears to provide good coverage of the topics of public health planning and evaluation (92% of respondents) and health economics, budgeting, and health care financing (92% of respondents). These content areas are less likely to be consistently covered in Mexico, Thailand, and the Philippines (9 to 56% of respondents). The Mexican FETP exhibits the highest percent of positive responses (70% of respondents) for the content area covering the presentation and communication of epidemiological information. The Thai, Philippine and Spanish FETP graduate respondents (34 to 55%) indicated that this content area was not always included in the curricula.

Responses by the FETP directors to Form D.1 (see Appendix C.1) do not always coincide with what the graduates reported in terms of curriculum content. For example, the Thai director said that qualitative methods were not covered but 91 percent of the Thai graduates sampled reported that it was. Spain's FETP director said that research design and understanding health services delivery systems were not covered in the class work component yet 67 percent of the graduate respondents, indicated that the first area was covered, and 100 percent indicated that the second was covered.

5.1.2 Content of the Field Work Component

Table 5.2 summarizes the data collected from the graduates related to the areas of focus within the field work component of FETP/PHSWOW training. Graduates' responses by cohort and program directors' responses are presented in Appendix C.2. These data illustrate that the FETPs and the PHSWOW visited are covering the core training areas of the FETP. Most of the respondents (93 to 100%) from all the countries reported that opportunities to manage surveillance systems and to conduct outbreak investigations were provided in the field work portions of their training. Many respondents (71 to 100%) also reported that their training provided them with opportunities to communicate epidemiological information, characterize a public health problem and carry out epidemiological research projects.

Responses from the graduates in our sample indicate that FETP field work in Mexico, Thailand and the Philippines has a strong focus on carrying out risk assessments and investigating emerging public health threats (61 and 93% of respondents, respectively). Responses from the Spanish FETP graduates suggest that these activities are not as strongly emphasized in this program (50 and 25% of respondents, respectively).

5.1.3 Balance Between Class Work and Field Work

Table 5.3 presents the lengths of the didactic and field work components of training for each site visit country as reported by FETP graduate respondents to our survey. All four FETPs dedicate more time to field work than to class work. The lengths of these training components vary from program to program. The Philippine and Thai FETPs dedicate the smallest proportion of the total training period to class work (approximately 10% and 20%, respectively). About 30 percent of the Spanish FETP's total training period is dedicated to class work. PHSWOW graduate respondents reported that the PHSWOW program in Uganda dedicates equal time (12 months) to each component.

Respondents in all of the countries visited mentioned the need to seek a balance of academic rigor and real world problems in the content of the FETP training experience. Responses from our site visit interviews are mixed on this issue. One respondent in the Philippines felt that the balance between applied epidemiology and academic training is "just right" and emphasized that "other learning comes later." Several respondents in Mexico mentioned that, while there were ample opportunities to do

Table 5.2 Areas of Focus Within the Field Work Component of FETP/PHSWOW Training

Site Visit Country	<i>n</i>	Managing surveillance systems	Outbreak investigations	Risk assessments and profiles	Investigations of emerging public health threats	Effectiveness of health services delivery systems	Effectiveness of prevention programs	Public health planning & evaluation	Health economics, budgeting, & health care financing	Presenting/ communicating epidemiological information	Characterizing a public health problem	Epidemiological research projects	Studies using qualitative methods
Mexico	58	54* 93%	58 100%	46 79%	54 93%	22 33%	23 40%	16* 28%	2* 3%	41* 71%	50* 86%	50* 86%	30* 52%
Thailand	35	33 94%	35 100%	22 63%	26 74%	19 54%	25 71%	17 49%	10 29%	31 89%	29 83%	34 97%	11 31%
The Philippines	23	23 100%	23 100%	14 61%	19 83%	14* 61%	17 74%	9* 39%	5* 22%	23 100%	20* 87%	21 91%	12 52%
Spain	12	12 100%	12 100%	6 50%	3* 25%	2 17%	9 75%	5* 22%	2 17%	10 83%	11 92%	9 75%	5 42%
Uganda ¹	8	8 100%	8 100%	8 100%	7 88%	8 100%	8 100%	8 100%	8 100%	8 100%	8 100%	8 100%	8 88%

Source: Form C

* One or more responses to this question were missing for this country.

¹ The very low number of graduates of the Uganda program and the recentness of their training must be considered in the interpretation of these data.

Table 5.3 Total Length of FETP/PHSWOW Training and Lengths of Didactic and Field Work Components

Site Visit Country	Length of FETP training course in months			Number of months dedicated to class work			Number of months dedicated to field work		
	range	mean	median	range	mean	median	range	mean	median
Mexico	24-48	25	24	1-24	9	8	4-44	18	16
Thailand	22-26	23	24	1-12	4	2	1-23	20	22
The Philippines	12-24	24	24	1-3	2	2	10-23	22	22
Spain	21-24	24	24	2-6	5	5	16-22	19	19
Uganda	24	-	-	6-12	11	12	8-18	12	10

Source: Form C

practice exercises, more field opportunities were needed so that trainees can apply what they have learned in class to real situations.

5.2 Strengths and Weaknesses of FETP Training

In this section, we describe strengths, weaknesses and limitations of the effectiveness of the FETP training as expressed by graduate respondents to our survey and by interviewees during our site visits.

5.2.1 Aspects of the Training That Worked Well

Table 5.4 summarizes graduate respondents' opinions of the skills learned through training that were most useful in their public health practice after graduation. Skills in conducting outbreak investigations and in developing/managing surveillance systems were those most frequently cited by respondents in all of the countries visited. Skills in conducting epidemiological research, applying epidemiological concepts and methods, disseminating public health information, and carrying out evaluations were the next most frequently cited as having been useful in graduates' public health practices.

Respondents in all of the FETP countries visited thought that one of the best things about the training program is the flexibility of the curriculum. They thought that, in order to remain valuable,

Table 5.4 FETP/PHSWOW Graduate Respondents' Opinions of the Skills Learned Through Training That Were Most Useful in Their Public Health Practice After Graduation*

Site Visit Country	<i>n</i>	All skills useful	Outbreak investigation	Developing and/or managing surveillance systems	Applying epidemiological concepts and methods	Epidemiological research	Data collection & management	Data analysis & interpretation	Qualitative methods & analysis	Research design	Characterizing public health problems	Risk assessment/profiles	Program planning and evaluation	Understanding health service delivery systems	Dissemination of public health information (publishing, presenting)	Communicating epidemiologic information to health planners	Public health management & administration	Planning & supervising field work	Working in the field	Use of computers and software	Health economics and budgeting
Mexico	58		18	20	13	17	1	12	1	7	2	4	14	2	4	2	1	1	4	8	
Thailand	35	2	10	10	9	4	2	2		3	2		4		1		1			1	
Philippines	23		12	10	2	4	2	2			1	1	8	1	11	2	1			4	
Spain	12	1	5	2	1			4		1			3		5					3	
Uganda	8		2	1	2	2				2			8	1	3	1	2			1	3
Totals	136	3	47	43	27	27	5	20	1	13	5	5	33	4	24	5	5	1	4	17	3

Source: Form C

* Cell values represent the number of respondents who listed each type of recommendation. Most respondents provided more than one recommendation.

FETPs need to adjust to the changing public health environments in their host countries. One response from an informant in Thailand captures this message:

Unmet needs continue in areas of the FETP's original focus – outbreak investigation and surveillance goals are still not fulfilled. Primary aims should be accomplished first so it will be important to maintain this direction but it is also important to develop skills to conduct research and continually assess and evaluate public health infrastructure and programs. We should be cautious about moving into other areas and should proceed step by step.

Another strength of the program that was repeatedly emphasized by respondents is the “learning-by-doing” approach that is characteristic of the FETP model. One respondent from Spain made this point clearly, telling us that “epidemiology can be very dry and the FETP makes the themes real.”

5.2.2 Aspects of the Training That Need Improvement

Respondents noted several aspects of FETP training that need improvement. One of the most frequently cited needs was for more organization or re-organization of program curricula. Many respondents felt that FETP curricula were fragmented. One graduate in Mexico reported that it is difficult to integrate the elements learned in the training and “understand everything from the bottom up.”

Many respondents noted the need for broadening the field experience of the trainees to include a wider range of activity types. There were many suggestions made in this area and most of the respondents stressed the importance of including activities in program planning and evaluation, public health administration, and health economics.

Respondents in several of the site visit countries highlighted the need to strengthen the focus on decision-making skills and address the importance of leadership. One graduate of the Mexican FETP pointed out that there needs to be more of an emphasis on developing solutions — the residents need to know more about programs that work, what are the fundamental elements, and what other elements will allow them to move beyond an investigation towards a solution.

Graduate respondents suggested many topics on the self-administered questionnaire for inclusion in the training program to more effectively address the challenges encountered in their public health practices. A summary of these suggestions across all five site visit countries is presented in Table 5.5.

Table 5.5 FETP/PHSWOW Graduate Respondents' Recommendations for What to Include in the Training to More Effectively Address the Challenges Encountered in Their Public Health Practices*

Site Visit Country	<i>n</i>	More field work activities	Program planning	Program evaluation	Research design	Health economics	Data management	Stronger emphasis on statistics	Qualitative methods	Preparing scientific papers and presentations	Presenting and communicating information to health planners	Communication of epidemiologic information to the media	Public health administration	Office management skills	Risk assessment/profiles	Budgeting and health care financing	Human resource management	Hospital epidemiology	More advanced epidemiologic methods (case-control, cohort, etc.)	Use of computers and software
Mexico	58	3	11	10		6		12	3	2			12	1	2	2	1	1	5	3
Thailand	35	2	4	6	2	10	2	3	5	1	2			1	1	1	1	2		2
Philippines	23		6	7		8	1	1	6					5	1	5	7			1
Spain	12					1	1	1	1			3								
Uganda	7		1			1	1	1			1		1			1			1	
Totals	135	5	22	23	2	26	5	18	15	3	3	3	13	7	4	9	9	3	6	6

Source: Form C

* Cell values represent the number of respondents who listed each type of recommendation. Most respondents provided more than one recommendation.

At least a few graduates in all five of the site-visit countries indicated that a stronger training focus on health economics and statistics would have helped them better address the challenges they face in their public health practices. Program planning and evaluation were also identified by the respondents as content areas that could be given more emphasis during training.

Interviewees from all of the study countries highlighted the need to strengthen decision-making capacity at the provincial level and the need for personnel who can use data to understand and develop solutions to health problems. Graduates need to learn the scientific method and thinking skills they can apply to data collection and analysis.

A respondent in the provinces of Thailand who has employed FETP graduates and mentored trainees cited a lack of breadth in their background and perspectives on public health that makes it difficult for them to adjust to work in the provinces where jobs are less specialized than in the central administration. On a surveillance project, for example, the mentor suggested a number of different data sources that the trainee might have used to get a complete picture of the public health problem being studied. Instead, the trainee limited surveillance to a single source, which seriously skewed the study and missed important segments of the high-risk population. This user of the FETP felt that participants are technically good but limited in their knowledge of health systems and local contexts — “they are not accustomed to applying epidemiologic knowledge to administrative functions such as the analysis of the managerial capability of programs or to developing solutions.”

According to one respondent, the Mexico FETP — having recognized that “pure” epidemiologists will not be able to do what needs to be done in their country — seeks to “create epidemiologists who can build epidemiological knowledge in an administrative context.” As the respondent recognizes, however, the challenge lies in how to build applications skills without ignoring epidemiological method and theory; how to teach the rudiments of outbreak investigation and surveillance while also teaching methods for management, administration, and planning — all without diluting the quality of the program.

5.2.3 Contextual Limitations on the Effectiveness of Training

There are several factors that were identified by respondents as barriers to training. The most important of these are inadequate financial support of trainees, multiple competing work demands during the training period, limited access to computers and software, and poor linkages with public health professionals at other levels and in other disciplines and departments.

Attending the training program can be costly for participants, especially for those who must relocate. In order to reduce the financial burden on the trainees, the MOHs of all four FETP countries provide paid leave for their trainees. According to the Directors of the Thai and Philippine FETPs, all other employers also provide paid leave for their trainees. During the two-year training period, trainees in the Thai FETP receive full salary from the MOPH. The Director of the Mexican program indicated that employers other than the MOH do not provide paid leave for their trainees. The Director of the Spanish FETP was not sure whether employers other than the MOH provided paid leave for their trainees.

Table 5.6 presents data on the number of graduate respondents who received paid leave from their employers and the employment situation of these graduates at the time they were enrolled in the training program. One hundred and seven (79%) of all respondents indicated that they received paid leave from their employers. Although they received paid leave, 12 of these respondents continued to work during their training (1 in Uganda, 9 in Mexico, 1 in Thailand, and 1 in Spain). One hundred and seventeen (86%) of the graduate respondents reported that they worked at no other job but only attended training during their enrollment in the program; 20 percent of these respondents indicated that they did not receive paid leave.

Table 5.6 Summary Information on Graduates Who Received Paid Leave and Their Employment Situation at the Time of Training

Site Visit Country	n	Graduates whose employers provided paid leave n=107*				Graduates whose employers did not provide paid leave n=27*		
		Number of graduates whose employers provided paid leave	Number who worked at their regular job	Number who worked at another job	Number who only attended training	Number of graduates who did not receive paid leave and only attended training	Number who worked at their regular job	Number who worked at another job
Mexico	58	37	9		28	19	2	
Thailand	35	32	1	1	30	1		1
The Philippines	23	21			21	1		1
Spain	12	11	1		10	1		
Uganda	8	7	1		6	1		
Totals	136	108	12	1	95	23	2	2

Source: Form C

* One response to this question is missing for Thailand

One respondent from Thailand reported that financial considerations really only constrain the research activities of the trainees because “the budget is not flexible” when it comes to these kinds of

activities — the Thai government budget has tight regulations on certain types of spending and cannot fund this kind of work. In the Philippines, trainees can seek a supplemental stipend if they need it. Because Mexico's FETP training is based in the capital city, the cost for those from outlying areas is sometimes quite high. Also, the majority of trainees have families when they enter the program, which implies a greater cost. The director of the FETP in Spain commented that financial considerations related to paid leave are not a problem and thus have no effect on the ability of this program's trainees to focus on their studies. However, in order to cover their field expenses, trainees in the Spanish FETP must apply to the Institute for grants from an "investigation fund." Access to this fund was set up by the Institute because it could not provide financial support to trainees, as all of their salaries are paid by their communities.

Respondents in many of the site visit countries reported that their FETPs lacked sufficient administrative support structures. This lack of administrative support can influence the quality of FETP training by compromising the training schedules. One respondent from the Philippines pointed out that the small FETP training staff are expected to be "jacks-of-all-trades" and are being strained by all of the demands placed on them. Although they are currently able to cope with these pressures, this sometimes affects the training schedules. One graduate of this program reported that "sometimes before the didactic sessions are completed, trainees are sent out on their first investigation because there are not enough FETP staff."

A similar lack of administrative support was reported by a respondent in Spain who told us that training staff must do everything themselves, including the clerical tasks. This situation is also encountered by trainees when they return to their jobs during their second year of training. The expectations of employers sometimes place a heavy burden on the trainees — they may be expected to do all of the tasks that they used to do, in addition to completing their final FETP project. One respondent pointed out that "...employers may not recognize the burden that is being placed on the trainees or even that they are still involved in the course."

Limited access to computers and relevant software can also affect the quality of the training provided by the FETPs. Many respondents were concerned that trainee technical competencies in areas such as intermediate to advanced statistical analysis could not be increased without better access to computers and statistical applications.

Linkages with public health professionals at other levels and in other disciplines play an important role in identifying and creating field opportunities for FETP trainees. If these linkages do not exist in the country, the experience of FETP trainees is limited by a lack of opportunities to carry out

public health projects. In Thailand, for example, the Division of Epidemiology's surveillance system is currently the only system with which the trainees in the Thai FETP can gain experience. Several respondents pointed out that forging ties with health professionals in the provinces may help to create more opportunities for training in surveillance systems. Respondents from Mexico indicated that connecting the FETP with other departments and disciplines would help the program obtain more opportunities for residents to do field investigations.

5.3 Impact of the FETP Program on Trainees

To achieve an impact on the public health infrastructure of participating countries, the FETP must provide trainees with knowledge and skills that will enable them to become productive members of the public health system. The training they receive must also be sufficiently recognized by potential employers so that graduates are hired and eventually promoted to positions of authority. In this section we discuss (1) skills acquired by FETP trainees, (2) professional advancement of FETP graduates, and (3) overall impact of the FETP program on participants.

5.3.1 Skills Acquired by FETP Trainees

When first introduced into each of the study countries, the FETP was designed to support practical epidemiology in the face of epidemic outbreaks, where once there had been a lack of resources and knowledge of methods to address such public health problems. Some of the respondents with whom we spoke compared the way outbreaks were handled in the days before FETP with the way they are currently handled. In the Philippines, for example, outbreak investigation has gone beyond "just counting cases" and "interviewing a few key people," to "digging deeper" by using a set of study questions and doing analytic studies. We heard similar statements in other countries.

Our site-visit interviews with public health professionals suggested a number of areas where FETP participants are acquiring new skills that assist them with outbreak investigations. Interviewees mentioned better use of the scientific method and a systematic approach to problem identification, more routinized and formal methods for documenting and monitoring emergent health problems, better coordination with local health officials around the initiation of control procedures, and better diffusion of knowledge to both health professionals and the public in affected communities. Respondents told us that

FETP trainees also learn to be creative and to use combinations of methods in their problem-solving outbreak investigation activities.

As decentralization progresses in all of the countries visited, those coordinating FETP outbreak investigations are adopting a model of “dispersed expertise.” This approach is moving the FETP from a role as the actual “outbreaker” to a more facilitative role, linking field investigations being conducted by local public health workers with knowledge and resources available nationally. FETP participants become the trainers and supporters of cadres of local health professionals interested in developing their own set of scientific and investigative skills.

FETP participants also play a role as educators of local health professionals and the public. These opportunities arise as interventions are designed and implemented to control outbreaks or as preventive measures against potential outbreaks are instituted. For example, one graduate in Mexico pulled together a series of meetings to educate physicians about dengue fever. This respondent found the physicians much more supportive of his efforts than they had been in the past, “because we now have the statistical and methodological bases to do investigations.”

The question then arises whether this new role for FETP requires a different type of training from that suited to the training of outbreakers per se. In Thailand, for example, there are now a number of epidemiology staff in the provinces that can do basic epidemiologic investigations and who only seek support from FETP as necessary. For this reason, several respondents suggested that the FETP emphasis on outbreak investigation be reduced and the program be “moved beyond outbreak investigation.”

While outbreak investigations were the primary focus of the early FETPs, efforts to develop new and improve existing surveillance systems led to development of surveillance skills as another important outcome of FETP training. FETP trainees work primarily in the central offices of their ministries of health on national-level surveillance systems. The majority of the surveillance systems with which trainees become familiar monitor communicable diseases, although systems are being developed to monitor non-communicable health conditions, such as chronic disease, trauma and injury, occupational health, and environmental health in the countries that we visited.

The decentralization of health systems underway in all five of the countries visited has important implications for surveillance. The FETPs are being asked to produce graduates able to develop and maintain provincial- and district-level systems, as well as to analyze data from these systems. One respondent from Spain expressed an urgent need for epidemiologists with surveillance expertise to provide leadership and “a common vision to professionals working in the field.”

FETP graduates also have important roles to play as links between the local levels, where the “work” of surveillance and outbreak investigation will increasingly be done, and the national level, which is moving toward a coordinating, integrating, and support function. This shift was described by a respondent in the Philippines as “a change from a reactive to a proactive approach.”

Trainers, graduates, and employers of FETP graduates question whether a practicum using sophisticated equipment and methods to analyze data from a national surveillance system adequately equips trainees to build local surveillance systems from the ground up in settings where such equipment and methods are often lacking. However, individual FETP graduates are seeking solutions to these problems. For example, an FETP graduate in Mexico is working to strengthen surveillance standards while developing staff resources and infrastructure at both the national and state levels. With decentralization, this graduate is looking forward to even greater participation by state staff because they will have shared responsibility for the systems.

Competent conduct of outbreak investigations and skilled analysis of surveillance data are of little use unless their implications for prevention and control can be communicated to others – to public health officials, to politicians and decision makers, to health care providers, to the media, to the public, and to the scientific community at large. Consequently, in all of the country FETPs we visited, dissemination skills were part of the core curriculum for both classroom and field training.

Consonant with the FETP approach, formal instruction in dissemination principles and precepts is supplemented by opportunities to “learn by doing.” Most FETPs encourage trainees to submit manuscripts to journals. Attendance at and development of presentations for the national epidemiologic conference and presentations is also encouraged. Trainees of the Mexican FETP consistently participate in dissemination activities, including reports and presentations to both internal and external audiences. Trainees learn to present the results of their investigations orally, and several have prepared papers that are ready for publication.

The most pronounced effects of FETP dissemination training efforts in four of the countries visited have been improved communication skills among the trainees and graduates of the FETP program; more scientific public health presentations that are evidence-based, clear and concise; and more effective communication with policy makers and other health professionals. In Thailand, for example, FETP alumni are called on to disseminate information to decision makers whenever one is available in the health unit. In Mexico, the FETP trainees do a rotation at the national public health laboratory where they learn to communicate directly with the laboratory staff for information on specimen collection and other theory-related aspects of outbreak investigation and disease control.

The Spanish FETP has chosen a “fairly structured manner” for nurturing the presentation skills of FETP participants. An annual alumni meeting is held, where all graduates are invited to participate and present their work. A Spanish respondent identified information dissemination as a goal of their program, stressing that trainees are continually “writing up what they are doing here.” Although the respondent felt that too little time had elapsed for a major change in the quantity or quality of contributions to journals or bulletins to be apparent, increases in conference activities among trainees are already observable. In the future, FETP training staff in Spain hope to focus on teaching trainees specific dissemination skills for communicating effectively with the media.

In the Philippines, production of sound scientific presentations can lead to opportunities to present at international meetings. The Philippines FETP also trains participants to produce more practical types of documents for real-world uses, such as memoranda to the Secretary of Health. These documents are short technical briefs that focus on a specific public health problem and recommend action. Some of these technical memoranda have been translated by the public information office into materials that the press could use. In addition to the Secretary of Health, the memoranda might be addressed to a regional director or provincial health officer who has jurisdiction in the area where the problem occurred. The Philippine program mandates that trainees conduct a media briefing as a requirement for graduation.

FETP graduates sometimes find it difficult to continue publishing under the ongoing pressure of their jobs after graduation. Several respondents mentioned that, although they were able to be quite productive in terms of formal publications and presentations while in training at the FETP, their productivity dropped substantially once they returned to the work world. Also mentioned was the fact that graduates who accept jobs with the central health administration seem more able to maintain publication productivity than those stationed in the provinces.

In addition to their training in applied epidemiology, respondents mention a number of other skills acquired during their FETP training experience — such as computer skills, statistical skills, and writing skills. Many of them also spoke of a more intangible skill that has served them well in their post-FETP careers. They refer to this as “learning how to learn,” “learning for life,” and “creativity.” This capacity comes from creative and critical thinking skills that the FETP approach has managed to develop in its trainees along with the content of the curriculum. It is these abilities that separate FETP alumni from their more academically trained counterparts — the ability to dig deeply for root causes, to synthesize knowledge from various sources, to apply techniques in novel ways, and translate to information into plans for public health action. Some examples of respondent descriptions of this training outcome are presented in Table 5.7.

5.3.2 Professional Advancement as a Result of FETP Training

Tables 5.8 and 5.9 compiled from our graduate survey data, show employers and employment of FETP graduates before and after training. Table 5.8 shows that the majority of graduates came to the FETP from national or regional government health agencies and that most respondents (about 73%) returned to such agencies following graduation, many undoubtedly to the same jobs. Only 7 of the FETP graduates who responded to our survey left public health for either private medical practice or full-time university teaching, although this may reflect a response bias in those graduates who returned the survey to us.

Table 5.9 shows that, prior to participation in the program, over half of the graduate respondents (55%) were doing clinical work or epidemiology. Only three of the graduates who reported doing only clinical work before FETP training continued on that track after graduation. Half of the graduates remaining in this group responded that they did epidemiology after completing the training program.

The majority of respondents — whether trainees, graduates, trainers, or Ministry of Health officials — agreed that FETP training has improved the range and scope of jobs open to alumni of the program. The program is generally considered to be a “stepping stone” to positions in the Ministry of Health. The Philippines program consciously fortified their Department of Health with FETP graduates before beginning to send them to the provinces. In Thailand, the longest established FETP, an equilibrium has been attained such that about 50 percent of the alumni are employed in the central administration, and 50 percent in the provinces.

Table 5.7 Respondent Views on the Benefits of FETP Training: Improved Critical Thinking Skills

Thailand
Since 1973, there has been an increase in the acceptance of epidemiology and epidemiology-based thinking. WHO and the World Bank do some program training (Residency Training in Tropical Diseases) and have contributed to this change along with FETP. But when you find a person who thinks critically, s/he generally is an FETP graduate. Their hallmark is evidence-based decision making.
The FETP has helped us in our professional development as well as in life. The program taught us how to think and make decisions, how to think about options (what we need to do) and why.
The main benefit of the FETP program is in “learning how to learn,” how to look at the big picture of a public health problem, rather than just following a routine without knowing why.
FETP provides “learning for life” – trainees are taught to think, to reason. FETP teaches a practical methodology, applicable to almost any area. FETP trainees learn to use epidemiologic methods for many purposes. Knowledge and skills and logical thinking are all important benefits derived from the FETP. Logical thinking is a weapon.
Creativity and the need for new ideas are also emphasized [in the FETP program]. Producing health education materials requires creativity, for example. Computerization of data does not necessarily encourage thinking.
Learning strategic thinking has been important.
The Philippines
I think that the FETP not only teaches you skills, it allows you to modify things, to go back and be able to present or modify things depending on who needs the data.
I really see the FETP in terms of the professional expertise that it brings which is really lacking in the DOH. It is a very data-based approach; their evidence-based approach is very important to me. I think that it adds really a missing point in the DOH. They have also, if you look at all of their reports, made it a point to put in specific recommendations from the public health perspective, which I like.
Mexico
Common sense [was a benefit of the FETP program] more than anything else.
[FETP] gave us a perspective to understand public health programs in the country. In a form that we can give opinions to bring to dialogues about how to improve the health system.
Spain
[FETP participants] had a lot of talents and skills before entering the program. One of the major changes is that the course has helped them to integrate the pieces of knowledge that they had before.

Table 5.8 FETP/PHSWOW Graduates' Employers Before and After Training

Employer before FETP training	Employer after FETP training						
	Host-country MOH	Regional public health facility	University or other academic institution	Private medical practice	Hospital, clinic, or laboratory	“Other”*	Total
All Site Visit Countries (n=136)							
Host-country MOH	40	5	2		2	2	51
Regional public health facility	7	32	2	1	4	1	47
University or other academic institution	4				1		5
Private medical practice	2	1					3
Hospital, clinic, or laboratory	5	2	1	1	4		13
“Other”*	6	3			1	7	17
Totals	64	43	5	2	12	10	136

* This category includes "other" as well as combinations of three or more of the first five categories.

Table 5.9 Types of Work Done by FETP/PHSWOW Graduates Before and After Training

Type of work done before FETP training*	Type of work done after FETP training					
	Clinical	Epidemiology	Public health administration	Teaching	“Other”†	Total
All Site Visit Countries (n=136)						
Clinical	3	20	2	3	11	39
Epidemiology		25	2	1	8	36
Public health administration		3	3			6
Teaching		5		1	3	9
“Other”†		13	1	4	27	45
Totals	3	66	8	9	49	135

Source: Form C

* There was one missing response for type of work done after training.

† This category includes "other" as well as combinations of three or more of the first four categories.

Other employment options are available to graduates as well. One respondent told us that, out of a class of five who graduated with him, two are directing community hospitals, one is working at the provincial level in the general hospital, one is working in a private hospital, and one is studying in London, England. Several respondents reported that FETP alumni are sought after by NGOs and other employers external to the ministry of health because of the international aspect of their training. In Thailand, a small number of graduates have been absorbed by the Health Systems Research Institute, although the majority of alumni still remain with the Ministry.

In both Thailand and the Philippines, FETP training must be combined with an MPH to achieve the best advancement. In Thailand, the FETP plus either an MPH or five years' experience leads to board certification in Preventive Medicine. Those FETP participants who enter the MPH program after completing FETP training have been shown to do well in their MPH studies and often tutor other students. In the Philippines, the MPH is clearly required for advancement within the central administration. One can advance to Medical Specialist II with the FETP credential alone, but not function beyond the level of division chief.

The Thailand and Philippines FETPs have been in existence for some years, and their graduates are moving up through the public health system, assuming positions of importance both within the ministry and in the provinces. In Thailand, graduates have assumed important positions in communicable disease control — more than 50 percent of the staff in this division are FETP graduates. Alumni of the Thai FETP are also taking increasingly senior positions in the Ministry of Public Health. One respondent estimated that, within the next five years, FETP graduates may be at deputy director levels.

Graduates of the Philippine FETP are not moving quite as easily into high positions within the Department of Health. This may be due to the younger age of the program and the mechanisms of promotion in place within the Philippine DOH. Graduates of this program are filling important positions in program management. FETP graduates serve as provincial health officers and regional epidemiologists. In these positions, the FETP alumni are translating technical public health information into policy for their offices.

Alumni of the Mexico FETP are also advancing professionally. The FETP residents are young and still working at the operations level. Some have moved up in programs in the national epidemiology division and elsewhere. Many FETP graduates are now leading programs in the epidemiology division as program directors and teachers. Respondents from Mexico also reported that they receive numerous job offers and a wide range of options for alumni. They feel that the program is “prestigious” and has created opportunities for them, often as a result of the training rotations they do in the different states.

The transferability of FETP-acquired skills and the adaptability of the program’s graduates are well documented by the ability of alumni to assume different types of employment in many different kinds of settings. A graduate of the Spanish FETP, for example, credits the FETP experience with enabling her to transition successfully from “field to center.”

The majority of respondents viewed the FETP as having provided a firm foundation in skills as well as opening doors, offering them changes in environment, and positioning them for professional advancement. However, FETP training is no guarantee of full employment in the highly politicized worlds in which the program’s alumni must function. One focus group participant in Mexico pointed out that FETP training does not always improve job stability because “this [stability] is not subject to a curriculum or to knowledge but to political forces.” Other focus group participants expressed general agreement with this point.

Regardless of the political barrier, the program’s track record in producing skilled and employment-ready graduates and in generating a cadre of trained field epidemiologists is beyond question. Moreover, by virtue of their skills, graduates are ascending to increasingly higher ranks in the health systems in their countries. In time, the gains made by FETP graduates may themselves make the staffing of public health positions more subject to demonstrated expertise and less subject to politics. A respondent from Thailand spoke of the early days of the Thai program, when FETP participants frequently had their work criticized by non-FETP doctors, and emphasized that the situation has significantly improved as more FETP alumni have reached higher ranks within the MOPH.

5.3.3 Overall Impact of FETP Program on Participants

MOH respondents spoke often of the excellence of FETP graduates and their usefulness to the public health systems in their respective countries. Respondents in the countries visited reported that they feel the FETP program is meeting the needs of their countries in producing good public health practitioners who are “disciplined, reason well, and are confident and respected among their peers.” Yet

perhaps the best indication of the overall impact of the FETP program on its participants is seen in their own faith in their capacity to meet the challenges of public health effectively and with the right tools. Some of their own expressions of this enhanced professional confidence are summarized in Table 5.10.

Table 5.11 summarizes the activities undertaken by FETP/PHSWOW graduates since completing their training. At least some graduate respondents in all of the site visit countries are taking part in each of the activity categories listed. The greatest proportions of responses were obtained for the activity types that correspond to the core learning activities in FETP – conducting outbreak investigations, managing surveillance systems, presenting/communicating epidemiological information, characterizing a public health problem, and carrying out epidemiological research projects. Those who send workers to FETP for training and who employ them after completion of the program often have high expectations about what graduates will be able to do. In a sense, FETP has been a victim of its own success. The program is viewed as producing graduates that are “jacks-of-all-trades.” The quality of the program and the caliber of its graduates has perhaps generated unrealistic expectations among potential employers about the type and scope of work FETP alumni will be able to undertake. As one FETP graduate explained:

Once you have graduated, the areas where you are working usually expect a lot of things from you. They usually give you a lot of programs to handle, aside from the usual programs you are handling. They think that you are very capable. You know how to use computers, how to deal with the media, troubleshooting, etc. Aside from the usual work of epidemiologists, they expect a lot.

A number of the programs’ alumni, while grateful for the knowledge and skills they acquired through their FETP training, are aware of the fact that the program did not fully equip them for post-graduate employment, especially in state and local settings. A Philippines focus group participant, for

Table 5.10 Respondent Views on the Benefits of FETP Training: Increased Confidence

Thailand
For us, FETP opened a door into public health — what should we do to improve the health of the population? Professional fulfillment and contributions to public health, as well as increased confidence, are also benefits we obtained from the program.
The Philippines
I think [the greatest benefit of FETP] is the professional growth, the career promotion, the new titles, and the new responsibilities.
I really gained confidence in my technical abilities.
The program really helped me gain confidence in dealing with the media.
I am not one hundred percent on the technical side, but my confidence is good for going out into the field. I manage to run the epidemiology and surveillance unit in the city on my own. FETP is always there for assistance, in terms of personnel and funding, if I need it.
Mexico
[I got] a lot of personal growth, enrichment. I now have confidence in the theoretical basis of what I say. I can defend what I say.
I have learned the “why” of the ABCs. I can be competent and capable in my place of work. I feel that I am aware of the standards.
I can go in with a good argument. One that is theoretically based. There is still a lack of integration of theory with application. How to apply this knowledge in a practical way. But we are beginning.
[Among the benefits were] to have more confidence in meeting public health problems, even politically. To be able to implement our judgments without anxiety.
The program integrated administration and public health along with the theory underlying the investigations they gave us. It made us capable of relating with all of the areas of medicine. Now we are medical epidemiologists. It gave us tools to work together in teams with whatever medical specialty.
For me, [FETP] is satisfying both personally and professionally. It gave me a lot of experience. This experience gave me a lot of security and was very satisfactory with what I have done to this point.
Spain
We have more personal capacity and ability.
We have more confidence in carrying out projects - both in ability and in the freedom to carry projects out.

Table 5.11 Summary of Activities Undertaken by FETP Graduates Since Completing Their Training

Site Visit Country	<i>n</i>	Managing surveillance systems	Outbreak investigations	Risk assessments and profiles	Investigations of emerging public health threats	Assessing effectiveness of health services delivery systems	Assessing effectiveness of prevention programs	Public health planning & evaluation	Health economics, budgeting, & health care financing	Presenting/ communicating epidemiological information	Characterizing a public health problem	Epidemiological research projects	Studies using qualitative methods	Other [†]
Mexico	58	53* 95%	49* 88%	44* 79%	45* 80%	33* 60%	38* 68%	35* 63%	19* 34%	45* 80%	45* 80%	50* 88%	35* 63%	19 33%
Thailand	35	27* 82%	30* 94%	19* 63%	25* 78%	17* 52%	23* 72%	24* 75%	18* 56%	27* 82%	30* 94%	30* 91%	20* 63%	4 11%
The Philippines	23	21* 95%	20* 91%	13* 62%	14* 64%	14* 64%	14* 64%	18* 86%	10* 53%	21* 95%	19* 90%	14* 67%	7* 35%	4 17%
Spain	12	11* 100%	9* 82%	6 60%	10* 91%	2* 18%	4* 36%	7* 64%	2* 18%	12 100%	10* 91%	10* 91%	5* 45%	1 8%
Uganda	8	6 75%	5 71%	5 71%	7 100%	7 88%	7 100%	7 88%	8 100%	7 100%	5 71%	7 100%	6 86%	3 43%

Source: Form C

* One or more responses to this question were missing for this country.

† This category includes the following types of responses: teaching/training others (17), work with various prevention/control programs (9), policy analysis (1), and consultant work for an NGO (1).

example, said that graduates feel “very comfortable at a technical level,” but that superiors expect greater knowledge and skill than they actually possess in management and administration. A graduate of the Thai FETP echoed this sentiment, contrasting two employment experiences at different levels of the health system:

My preparation in the FETP was useful for activities in the provincial health office, where there are more highly trained staff and where health department activities included analysis of data and development of problem solution plans. In my current position (at the district level), I am using more epidemiology than before because it is at this level that things are “done.” There is more detail and in-depth knowledge [required] at the district level, where we are trying to increase our data collection capabilities. We are using epidemiology in practice to evaluate implementation programs. FETP prepared me less well for this work.

In response to the expanding expectations of employers, as well as to their own visions of what their respective countries need, program organizers for the FETPs in Thailand, the Philippines, Mexico, and Spain are all considering modifications to the FETP curriculum that would move the FETP closer to the Public Health School Without Walls concept.

5.8 Recommendations For Improving the Quality of FETP Training

Some of the suggestions that we received from respondents as to how to improve the quality of training provided by FETPs are discussed in this section.

There was emphasis in our interviews on the need for a broad curriculum that goes beyond infectious diseases and addresses chronic disease, injuries, and violence, especially with regard to surveillance systems. Generally, respondents felt that it would be good to expand the field experience to include activities other than infectious disease outbreaks, such as program planning and evaluation, public health administration, and health economics. This expansion may enable trainees to address the increasing complexity in the nature of the problems being referred to FETPs from the regional and local levels.

To improve the content of training, programs could use past problems and difficulties as case studies so that trainers and trainees alike could learn from these experiences. At the same time, training should focus on the fundamental elements of programs that have been shown to work. It was suggested that the curriculum could include a workshop on how to conduct negotiations with superiors at higher

levels. Another suggestion was to end the training with a workshop that integrates all of the elements addressed in the program so that trainees can see how they fit together.

There were several suggestions to ameliorate the very difficult conditions that may surround the training experience for trainees. The FETPS could increase the number of administrative staff to reduce the burden on the training staff and the consequent risk of comprising training schedules. One respondent proposed that the program liberate trainees from some of their job responsibilities in cases where they return to their jobs before their training is completed. It was also suggested that FETPs explore distance learning as an option for those trainees who may not be able to leave their position for the full length of the program.

6.0 Public Health Usefulness of FETP

In this chapter we assess the public health usefulness of the FETP program — the extent to which the FETP is serving the needs of the public health systems in participating countries — by examining the impact of FETP participants on the public health system in the host countries visited. Table 6.1 summarizes FETP graduates’ opinions on ways in which they have been able to contribute to the improvement of the public health practice in their countries. We look at the public health impact of the FETP in the following areas:

- # Impact on Outbreak Investigation
- # Impact on Surveillance
- # Impact on Dissemination
- # Impact on Program Management and Administration
- # Impact on Training
- # Impact on Health Systems Analysis
- # Impact on the Public Health System as a Whole

We conclude with suggestions for improving the public health usefulness of the FETP program.

6.1. Impact on Outbreak Investigation

FETP participants in all five study countries are conducting outbreak investigations in increasingly decentralized public health systems. The districts and provinces in the five countries are developing their own capabilities in outbreak investigation. Provincial efforts were formerly relatively superficial, with the vast majority of outbreaks reported to the central public health administration for action. The number of outbreaks currently being referred to the national level is steadily dropping as the provinces assume greater responsibility for investigating their own outbreaks.

A number of respondents have suggested that this situation requires a new response on the part of the FETP. To date the FETPs have been considered the national “firefighters” of their respective

Table 6.1 Summary of How Graduates' Involvement in the FETP Helped to Improve the Public Health Practice in Their Countries

Site Visit Country	Content Areas						Public Health Activities					Administrative Activities							FETP Benefits				
	Infectious Disease	Injury	Chronic Disease	Environmental Health	Occupational Health	Veterinary Health	Epidemiological Methods	Surveillance	Outbreak Investigations	Service Delivery	Prevention and Control	Research	Human Resource Development	Management	Health Policy	Planning	Evaluation	Infrastructure Development	Skills (e.g. Computer, Writing)	Critical Thinking	Networking	Personal Development	No Improvements Resulted
Mexico <i>n</i> =58	11	0	0	3	1	0	26	24	14	7	9	11	14	6	3	5	8	2	6	6	3	8	4
Thailand <i>n</i> =35	12	0	2	2	3	0	8	16	3	5	6	8	3	3	2	7	4	0	3	4	1	4	3
The Philippines <i>n</i> =23	2	1	0	0	0	1	10	10	12	5	3	3	6	4	13	6	2	1	7	2	0	2	1
Spain <i>n</i> =12	0	0	0	1	0	0	3	4	7	0	0	1	0	1	1	1	1	0	4	0	0	0	3
Uganda <i>n</i> =8	0	0	0	0	0	0	0	3	1	3	1	4	2	4	0	3	3	0	0	1	0	1	0
Totals	25	1	2	6	4	1	47	57	37	20	20	27	25	18	19	22	18	3	20	13	4	15	11

Source: Form C

* Cell values represent the number of graduates who listed each type of response. Most respondents provided more than one response.

health systems, noted for their rapid and effective responses to national and local health crises. Instead of hiding outbreaks from the public, FETP graduates are able to present accurate data to the press and demonstrate to the public how they are handling the situation. Expanding epidemiology capacity in the districts and provinces may allow the FETPs to move beyond “epicrisis” to a more proactive approach to prevention of outbreaks. FETP graduates are beginning to apply epidemiological tools not just to acute infectious diseases but a variety of other serious conditions affecting the health of the population, such as chronic diseases and occupational and environmental health problems.

Data from our respondents demonstrate that FETP training has made a noticeable difference in how outbreak investigations are conducted. One respondent from the Philippines stated that the outlook and capabilities of FETP trainees has shifted the prior tendency to “try and cover up outbreaks” to a situation where epidemiologic data are more systematically collected and analyzed and interventions are designed. The types of impact FETP training has had on the investigation of health problems include: (1) a broader scope of outbreak investigations, (2) wider diffusion and use of sound epidemiologic principles, (3) changes in public health policy, (4) implementation of effective prevention and control measures, and (5) reductions in morbidity and mortality.

Broader scope of investigations. FETP training has affected the scope of disease investigations in host countries in two ways. First, the focus of investigations has shifted from the national level to the regional or local level. This shift allows for a more accurate investigation of the geographic space in which an outbreak occurs and allows for quicker response to the problem by FETP graduates at the regional or local level. FETP graduates are also moving beyond a focus on acute infectious diseases to include investigation of chronic diseases and occupational and environmental health issues. For example, FETP graduates in the Philippines have investigated the waterborne transmission of cholera, conducted the initial investigations of red tide in that country, and addressed the occupational and environment health problem of mercury poisoning among gold miners.

Wider diffusion of sound epidemiologic principles. The diffusion of epidemiologic principles mirrors the change in scope of outbreak investigations from the national to the regional and local level. The use of epidemiological principles and methods was previously concentrated in the national Ministries of Health (MOH). The proper use of epidemiological tools is now being diffused to professionals in regional and local MOH offices as well as to physicians in local hospitals. For example, a graduate focus group participant in Mexico reported that due to FETP physicians — including surgeons and oncologists — hospitals are more sensitive to unusual cases and better able to correctly identify outbreaks and

epidemics. This more widespread awareness of what epidemiology is and what it can do forms a basis for cooperation of public and private health sectors around issues affecting the health of the population.

Changes in public health policy. Although FETP outbreak investigations have led to policy changes, this is an area that many of our respondents said needed improvement. In one example of this type of impact, the FETP in Thailand identified an outbreak of rubella. Recommendations by the FETP in the wake of this outbreak eventually led to the inclusion of rubella vaccine in the national childhood immunization program.

Implementation of prevention and control measures. It is only through correct identification of the source of an outbreak that appropriate control measures can be instituted. Through scientifically sound investigations FETP graduates have been able to design effective prevention and control measures. For example, a graduate in the Philippines identified the source of an outbreak of food contamination in high schools and put together a plan to prevent future outbreaks, as well as measures to monitor the source of the problem to determine whether the recommendations were being followed. In Thailand, a model for infection control in hospitals was developed by FETP staff and participants when the U.S. model failed to work in their country context. A one-week basic training program was developed for infection control nurses and there is now an infection control nurse in every ward.

Reductions in morbidity and mortality. The efforts of FETP staff and participants are leading to reductions in morbidity and mortality in the host countries visited. Respondents in Thailand attribute a decline in the number of cases of Japanese encephalitis to the collaboration of the FETP with armed forces vaccine trials research. An FETP graduate in the Philippines worked with local health officials during the 1991 Mount Pinatubo disaster to ensure minimal epidemic outbreaks among the 40,000 people affected by the eruption. An FETP epidemiologist provided a regional health director in the Philippines with advance warning of an impending cholera outbreak. The director of this program was able to institute early control measures based on the precautions and advice of the epidemiologist. This director is convinced that the outbreak “would have been much worse without the early warning.”

6.2 Impact on Surveillance

FETP participants have had numerous impacts on surveillance systems in their respective countries. This section presents data from FETP graduates, their peers, trainers, and employers, and is organized into the following sections: (1) improved and streamlined procedures, (2) targeting of high-risk

populations, (3) infectious disease surveillance, (4) surveillance of noninfectious health conditions, and (5) support for development of local surveillance systems.¹

Improved and streamlined procedures. Respondents report that FETP participants are responsible for recent improvements in surveillance system designs and procedures. Before FETP, surveillance systems in the Philippines collected only the number of cases. Now the Philippine surveillance system can answer questions of time, place, and person. An FETP graduate in the Philippines served as a member of a technical working group that designed a series of new surveillance reporting forms. A participant in the Mexican FETP helped his employer begin developing procedures and implementing measures to analyze data from events for which preventive actions could be taken, such as vaccine-preventable diseases, acute respiratory infections, and gastroenteric parasites.

In Mexico, a new government program called RHOVE (Red Hospitalaria de Vigilancia Epidemiologica) is being piloted that will create a hospital-based surveillance network. Epidemiologists, including FETP graduates, will participate in the development and operation of this network. The network, based on Epi-Info, will collect surveillance data from hospitals and transfer them to a central computer, in a manner similar to that used by the CDC's infectious disease surveillance system (NETSS). Each participating hospital will be connected to the network via modem. To the extent staff are available, each hospital will have an infectious disease specialist, an epidemiologist, a public health nurse, a secretary and a computer technician. A monthly bulletin will be published in which professionals can share information related to surveillance in hospitals, including articles on special problems. The plan is to first connect all 200 of the hospitals belonging to the national Social Security System, and later, to connect hospitals in regional jurisdictions. At this point, the plan is in the pilot stage with 87 national hospitals participating.

Targeting of high-risk populations. The FETP is assisting with efforts in the study countries to use surveillance data to identify high-risk populations and target them for appropriate interventions. In Mexico, the Secretary of Health maintains a focus on health problems of marginal groups and indigenous peoples. The FETP is trying to obtain multiple perspectives on these groups by doing special studies and collecting various kinds of information in order to develop broader and more appropriate programs for them.

Infectious disease surveillance. As might be expected, the major accomplishments of FETP participants are in the area of communicable disease surveillance. In Mexico, FETP graduates have

1 Appendix C.3 presents FETP graduates' open-ended responses about improvements that they have made to their employers' surveillance systems since completing FETP training.

developed enhancements to the surveillance systems for polio and acute flaccid paralysis. FETP graduates in Thailand are assisting districts in clarifying the clinical manifestation of dengue. The Thai FETP has been critical in HIV/AIDS surveillance in that country. The Philippines FETP is establishing a National Sentinel Surveillance Network that maintains surveillance for about a dozen diseases, including polio and Ebola.

Surveillance of noninfectious health conditions. FETP activities in chronic disease and trauma are less prominent than in those the infectious disease area, although a number of our respondents feel that the FETP should be moving in that direction. As FETP countries begin to move through the epidemiological transition, chronic diseases and occupational and environmental health issues are increasing in importance relative to infectious diseases. In the Philippines, for example, cardiovascular disease is on the rise, and cancer and renal disease are already among the top ten causes of morbidity and mortality. Respondents feel that they should apply the epidemiological skills acquired through FETP training to the study of these conditions. In the Philippines, the FETP had a hand in decreasing fireworks injuries. According to one respondent, the link between fireworks and injuries “was not noticed until the FETP wrote about it.” Graduates in Thailand are working in the areas of diabetes, accident prevention, and heart disease. A Thai respondent notes, “Some non-communicable diseases are included in the current surveillance systems, although we are still working to define chronic diseases for surveillance.”

There are signs that the agencies currently responsible for environmental and occupational health in the study countries are increasingly reaching out to FETP for collaborative assistance. A recent law passed in Spain gives the Ministry of Health permission to participate with the Labor Ministry in occupational health programs. Similarly, in the Philippines, one respondent reported that the environmentally focused offices (like the Bureau of Mines) are moving to help out with FETP investigations such as a mercury poisoning problem among gold miners.

Supporting development of local surveillance capacity. In this era of decentralization, perhaps the greatest contribution being made to surveillance by FETP participants is in lending their support and expertise to the development of local surveillance capacity. In many countries, there were no structured epidemiological investigations or scientific reports before the FETP. Now FETP graduates are training public health staff on proper reporting procedures and creating reporting systems at the local level. In the Philippines, the FETP has created a more rapid local response to outbreaks and now provides data to the city-level health officers. With rapid response and accurate data, the city health officers have the information necessary to produce press releases. This demonstrates real progress from a past tendency to cover-up outbreaks because of an inability to respond to them.

6.3 Impact on Communication and Dissemination

Most respondents felt that the FETP program and its participants had made great strides in the area of information dissemination. Some were also aware of how much room there is for improvement. Barriers to improvement cited included lack of a supportive information technology infrastructure and lack of time away from other professional responsibilities. Health workers in the provinces were handicapped on both counts relative to their colleagues working in the central administration.

The types of dissemination activities mentioned by respondents include: (1) written reports and articles, (2) presentations at meetings and conferences, and (3) interactions with the media. We discuss each of these topics in turn.

Dissemination of written reports and articles. The number of surveillance systems has increased in all five study countries, as has the dissemination of both raw and analyzed data from those systems. Respondents in all five countries report that new surveillance systems have been established at both the national and the local levels. Both the quantity and the quality of the information disseminated from these systems have also improved significantly, partly through the efforts of the FETP. A graduate of the Philippines FETP reports that his office produces a quarterly bulletin and a one-page report through which surveillance information is disseminated. He produces them more often if needed, although he finds he is constrained by lack of staff support. Another Philippines graduate has been editing the FETP's *Morbidity and Mortality Weekly Report (MMWR)* since completing the program, presenting morbidity and mortality statistics from previous months and analyzing the data. He feels this publication has both clinical and public health significance.

A respondent from Thailand said that trainees provide input for surveillance reports that are used by decision makers and others in the public health community. The FETP annual report is cited by Thai respondents as a source of information, even in the university, and is quoted much more often than it was previously. Publications in journals by Thai graduates are also common. One respondent cites the "tons of literature that the trainees have produced," with one graduate listing over 80 publications.

FETP graduates in Mexico participate in producing the epidemiological bulletin published by the Division of Epidemiology and are responsible for many of the articles. Alumni also continue to contribute articles. According to one respondent, the bulletin is reaching both public and private audiences, with a subscriber list that includes epidemiologists, private physicians, and other health

professionals. One of the Spanish FETP graduates contributes at her place of employment to a monthly bulletin with different health topics in each issue.¹

Dissemination through presentations at meetings and conferences. Another type of dissemination activity is the presentation of papers at meetings and conferences.² FETP trainees become accustomed to presenting the results of their outbreak investigations and research and seem to transition easily into doing this as part of their jobs. A Philippines graduate says he is called upon to do presentations about once per quarter, but sometimes more frequently depending on need and invitations. Their most common audience is public health officials, such as provincial and district health officers, and the presentations include recommendations for action.

Respondents also report that FETP participants are making presentations at epidemiological meetings, at public health meetings, and to groups of medical professionals (such as microbiologists and surgeons). For example, a graduate of the Mexican FETP presented on dengue fever at a meeting of surgeons. Both the quantity and the quality of FETP participation is increasing.

One Thai respondent mentioned participating in a national seminar on epidemiology that brought together public health professionals from many fields and reported that this seminar has had an impact on communicable disease immunization and prevention programs in this host country. Data covered in this seminar were presented by FETP trainees and alumni. The event has proven important for drawing attention to public health issues and encouraging political involvement. As successful as this event was, another respondent from Thailand feels the FETP program as a whole should be doing even more to increase dissemination of information to policy makers and the public, mentioning as a model a workshop on Research into Action held by the Rockefeller Foundation in Washington, DC.

Interactions with the media. Most of the FETPs felt they were not doing enough in the area of media relations. According to one focus group participant from Spain, “Our communication with the press is very bad. This is not just FETP but all public health. We don’t clearly communicate decisions and information.”

The notable exception to this is the Philippines FETP, which has taken a proactive approach to working with the media. Initially, the program’s relationship with the media was problematic, with reporters “saturating the media with reports,” tending to “bloat” and “exaggerate” the news. The FETP met the problem head on by discussing the matter directly with reporters and, as a result, the situation has improved. People from this FETP have talked with reporters about the basic principles of outbreak

1 Topics covered in graduates’ publications are listed in Appendix C.5.

2 Topics covered in graduates’ presentations are listed in Appendix C.4.

investigation. As one respondent said, “We actually now just give them the facts and they call us first before they release a story.”

Adeptness in dealing with the media is something the Philippines FETP has passed on to a number of its graduates. Several respondents spoke of the importance their program accords to media relations and how critical it is, for example, that the Department of Health “should be the first to discover [emerging health problems] and tell the population, give them precautions and advice.” Focus group participants speak of their program’s credibility with the media, and of how positive press reports citing the FETP’s work have improved the program’s standing. Along with this credibility comes the responsibility for maintaining it through consistently sound and evidence-based action. If they hope to maintain their reputation for reliability, there is, as one respondent put it, “no room for errors.”

6.4 Impact on Program Management and Administration

Although the public health impact of the FETP has been greatest in the areas of disease reporting systems and the collection of reliable data — both short-term outbreak investigation and longer term surveillance — the FETP’s evidence-based, analytical, problem-solving approach can be applied to other public health areas, such as program management and administration, including planning and evaluation.

A logical extension of the FETP’s goal of translating epidemiological research into action is to support the use of data for decision making in the management and administration of public health programs. While it can be debated whether this is moving the FETP too far afield from its original purpose, FETP graduates are entering employment spheres where the use of such skills is required. The FETP trainees are being groomed to become, as one respondent put it, “chiefs, not Indians” and it is likely that the majority of them will ultimately assume positions as administrators with responsibilities for program design, monitoring, and evaluation. Data are as important for the prioritization of objectives, the allocation of resources, and the measurement of outcomes as they are for the identification of an outbreak source and the design of a control intervention. In this section we discuss how FETP graduates have helped others to use “real data” effectively to understand health conditions, solve health problems, and support decision making.

The FETPs in Thailand and the Philippines have been operating long enough that their graduates have become “movers and shakers” of the public health system. The program has produced a cadre of public health officials that have a sound knowledge of epidemiology — about 70 work in the Ministry of Health in Thailand alone — a tremendous asset for these countries. According to one respondent, the

impact of the FETP program in Thailand has been fueled by the efforts of these alumni, who are currently influencing public actions. As one respondent said, “Many decisions that are now being made have been founded on the FETP training base.” Increasing emphasis is also being placed on planning and “health futures” prediction scenarios and, hardly surprising, an FETP graduate serves as Director of the Ministry’s Division of Planning. One Philippines respondent noted that some people are very good at developing policy and influencing policy decisions and stresses that this is a very important tool and should be a focus of the FETP. Two examples of how data-driven policy has been used by FETP participants to support public health efforts in their countries are presented below.

Hepatitis C testing – a cost-benefit analysis. The FETP trainees in the Philippines conducted a medical economics study which had very practical implications on the choice of the Hepatitis C diagnostic test. The Department of Health had planned to purchase the diagnostic test kits. According to our respondents, had they done it in their usual manner they would simply have chosen the cheapest ones. A report prepared by the trainees presented to the DOH information on the sensitivity, specificity, and cost per additional yield for alternative tests. Upon reviewing the study, the DOH said that in future bidding, they would require information about the diagnostic test’s sensitivity and specificity as part of the documentation.

Hepatitis B vaccine program. FETP graduates in Thailand are described by one respondent as having “heavy involvement in policy options and planning and in program development.” One example provided to illustrate this statement was the case of a Hepatitis B vaccine program. An FETP trainee conducted a study to support decisions on the Hepatitis B vaccine program. Decision makers sought to determine whether or not the Hepatitis B vaccine should be included in the national childhood immunization program and, if so, on what schedule. The trainees’ study considered costs and employed decision analysis. As a result of that study, the vaccine was introduced into the program.

Although program planning and evaluation are not the primary focus of the FETP, many trainees and graduates work in positions where these activities are part of their responsibilities. They may function, as one respondent suggested, as low-profile evaluators — not by producing formal written evaluations or health policy research, but by serving on committees and contributing quietly to the improvement of health programs. They also may conduct quality assurance studies with policy implications, such as a study done in the Philippines on the availability of essential drugs. Even their outbreak investigations generally have policy implications, such as action to be taken against a particular market or facility suspected as the source of food contamination. One FETP graduate spoke positively of

this role, saying that the situational assessment of health problems in specific areas and the data that come from epidemiological analysis are an important contribution to policy decisions.

Yet, many respondents would like to take a more proactive role in the public health system than has been normal practice for public health professionals in the past. Graduates of the Mexican FETP focus group wished to bring their opinions more directly to the task of improving the health system and feel constrained because they have few opportunities to make decisions. As one Mexican graduate said,

The job of the epidemiologist is not well understood. ... People don't understand the statistical part, the computers. It is more than outbreaks. ... We need to manage, to assess the real needs of the population, we need to use analyses to do this. This is what you need me for. We have an important role to educate our management.

Perhaps as the decentralized health systems in the FETP countries become more settled, FETP alumni will find a broader scope for their planning skills and aspirations than administrative positions within the national Ministry of Health allow. As they assume positions in the provinces, the FETP graduates are becoming part of a network of trained field epidemiologists who know how to analyze and interpret data. Because of this, regional political decision making is increasingly being influenced by the technical training FETP has provided. One Spanish respondent commented, "The recent response to meningitis is noticeably different in the regions where we have FETP graduates." A quote from one of the Thai respondents sums up many of the issues raised thus far:

Information collected by the FETP is being used for planning. But planning is more than data. ... Application of knowledge is the key – how to develop evidence and then move to present the evidence to different groups so they can integrate it; interpret the evidence, develop options, make decisions. Allocation of resources should be based on evidence. ... [Yet] decisions are often politicized, based on perceptions rather than evidence. ... The key is to create a debate based on evidence in order to preserve the integrity of the scientific process.

6.5 Impact on Training

Although the FETP was not formally conceived as a "train-the-trainers" program, the concept nevertheless was part of the thinking of some of the FETP's in-country founders. One respondent from the Philippines DOH said that part of the overall goal of training people was to have them train others so

they can delegate work. The management strategy was to let support staff take on more responsibilities over time. This same respondent feels this is one area where his country's FETP may have failed.

I expected that [the graduates] would train others in the workplace in areas concerned with epidemiology. From my experience, it looks like the epidemiology work is left with them alone. I have not seen knowledge transferred to others. I think maybe they should have some formal training in how to train others.

The data Battelle collected from the survey of graduates respondents suggests that a great deal of training is going on, and that it is something of which the FETP directors and training staff may simply be unaware. Table 6.2 presents a summary of those to whom training has been delivered by FETP graduates and of the settings in which that training has been delivered. This table shows only categories with a reasonable number of responses. Respondents were asked to designate all categories that were appropriate, so categories are not mutually exclusive.

Most training delivered by FETP graduates is provided to public health co-workers in national or local Ministry of Health settings, although training of medical staff and university training are also important activities. The most interesting finding in this table is that almost all graduates reported doing some training, and only 10 out of 136 graduates surveyed told us that they did no training at all.

To further explore the gap between the amount of training being done by FETP participants and the amount by training staff are aware of, we divided interviewee responses to our questions regarding training activities undertaken by FETP participants into "responses by training staff" and "responses by participants." These are shown in Table 6.3. Again, it is clear that graduates are doing considerable training and that FETP staff may not be aware of the extent of it this activity

Table 6.2 Types of Persons Trained by FETP/PHSWOW Graduates and Settings in which Graduates Delivered Training

Type of persons trained*	Thailand n=35	The Philippines n=23	Mexico n=58	Spain n=12	Uganda n=8	Totals
Public health officials/staff	17	16	22	2	2	59
Medical personnel	15	31	23	6	0	75
University students	17	4	19	1	1	42
FETP trainees	9	2	5	1	2	19
Training settings†						

National MOH	7	3	2	3	1	16
Local/district health office	1	6	1		1	9
Hospital	4	1	8	1		14
University	12		11	5	1	29
Conference		1	2			3
No training reported	2	0	5	2	1	10

Source: Form C

Note: Cell values represent examples of the training settings and types of people trained by the FETP graduates in our sample. Many respondents provided multiple examples.

* One response to this question is missing for both the Philippines and Uganda.

† Five responses to this question are missing for Thailand, 5 are missing for Mexico, and 2 are missing for Spain.

Table 6.3 Respondent Views on the Impact of FETP Training: Training Activities

Comments by FETP Training Staff
Training of providers and coworkers has been limited with respect to clinical epidemiology. It has been difficult for the FETP to penetrate to clinical settings.
Only one aspect [of the FETP] may have failed. I expected that [the graduates] would train others in the workplace in areas concerned with epidemiology. From my experience, it looks like the epidemiology work is left with them alone. I have not seen knowledge transferred to others. I think maybe they should have some formal training in how to train others.
We take care of leprosy, filiarisis, which are chronic; and acute diseases like dengue and rabies. For dengue, we are not able to make use of our trained epidemiologist. We expected the graduates to develop the skills of those under them. Right now they are more concerned with the problems of those diseases so that they may not have had a chance to transfer the knowledge.
... part of our overall goal of training people is to have them train others so they can triage work. You know, let the support staff take on more responsibilities over time. This is an important management strategy. I am not really aware of the other graduates= capabilities. However, during our regular meetings we are actually looking for a time by next year to have a regular updating in which we will assign division people to undertake a training course for workers here.
... what good is this information if the people at the local level do not understand it? We are not given any funds for training workers. I think that epidemiology is the basic foundation of public health and training in it should not be overlooked.
I just [supported one of my epidemiologists as an FETP trainee for two years]. She will be a resource speaker in training courses for all technical staff. The technical staff are to be trained by her in basic epidemiology, looking at disease trends, etc. This graduate is coordinating well with training division staff and feedback from technical staff has increased.
I have definitely seen changes in the way that information is exchanged. [One of the FETP graduates] is very involved in the training of other health workers in the area of epidemiology. He has already done several batches of training. Right now [the health workers] are being trained in how to make up surveys and how to organize and analyze health information. He is even helping them to learn how to write reports on their investigations.
... I want to emphasize that our graduate has been able to implement prevention interventions and he has been able to make a real difference in terms of his training of other workers.
<i>[Have there been efforts by FETP graduates to provide training to coworkers?]</i> There=s been so little time to see this. I think it will happen but more time is needed. They certainly work together to investigate an outbreak. As for anything formal, I don=t know. They use information that they=ve learned and apply it.
<i>[Do you see that the concepts and methods from FETP are being disseminated in some way?]</i> It=s an incremental change. We have seen a bit change here overall with the growth in the number of people and the resources we have.

Table 6.3 Respondent Views on the Impact of FETP Training: Training Activities

Comments by FETP Trainees and Graduates
Most provincial health officers don't know epidemiology. I worked with provincial and district staff to teach them basic epidemiology, aiding dissemination of epidemiological concepts through in-service training.
There is not much continuing education at the local level so teaching [by graduates posted there] is limited. Province-level graduates analyze data and make decisions but usually don't do training.
A major deficiency is getting epidemiological concepts into clinical practice. Problems have been encountered with the communication of epidemiologic issues to clinicians.
I was sent to Emory University and I completed the management for international public health course. When I returned, I had to teach and train the local executives and local public health officers about management and program evaluation, etc. I started here to give training to all of the members of the medical staff. We also included nurses and administrative officers.
The FETP also gives periodic pointers to the provincial and regional epidemiologists on surveillance.
Everything is going well except when there are disasters. I do have a nurse and medical technician to help me. Also, we have trained staff at the district hospital to provide us with their data. Our surveillance is hospital based. There are about 20 hospitals. I do not always have the same number of staff. They come and go.
We are training rural health physicians, public health nurses, and rural health midwives on basic epidemiology. Of course we have to adapt this material to the capabilities of these workers. If it is for physicians, it will be specifically designed for them. At the same time we are now into training the barangay health workers, the community volunteer health workers, on disease surveys.
In terms of training, I think that it is very important to relate training methods to the local health officials and nurses.
The FETP can only make recommendations to the program manager. For example, with dengue we were asked to give lectures among schools and in the community in general. Disease control programs here are at the health center level. We train health center workers and bring them along on investigations. Whenever we cannot investigate we call in the FETP.
[The FETP has] invited us to give specific courses in epidemiologic surveillance. We participate as instructors at the invitation of the coordinators of the residency. We cooperate over the year in diverse training events, depending on our competencies. For example, we are working with [the trainees] now on surveillance systems, how they work, standards, the case definitions. They work with us on instruments, applications. In the short run, we will begin to visit hospitals so that they will understand hospital surveillance.
[The FETP graduates] have trained people who work with them (in-service training, case investigators in investigation, encuestas, field techniques). Nurses, general practice doctors, and health workers. One of them educated state directors of health in dengue. Also specialized physicians X pediatricians, surgeons, internists. Every year, they give an overview of the work that they are doing. They have trained administrators, biologists, specialist in water quality.

6.6 Impact on Health Systems Analysis

The impact of FETP on health systems appears to be minimal (see Table 6.4). Even in the long-established FETPs, respondents tend to refer to effects in these areas as “no change,” “not clearly seen,” “not well developed,” or “not priority areas.” However, some examples of FETP impacts on health systems analysis and health systems change were provided. A respondent in the Philippines offered a list of areas in which FETP studies have contributed to changes in the health care delivery system: immunization studies, environmental health and sanitation studies. Studies of disaster-related diseases were also cited as important. As one respondent pointed out, “The FETP really helps us with this in terms of management of evacuation centers and resettlements.” A Thai respondent reported that FETP graduates have been involved in health care reform, as well as with AIDS and TB control.

One Thai respondent identified bureaucracy and a lack of direction as major barriers to the improvement of health services that have been effected by FETP graduates in Thailand. There is some evidence that the FETPs are considering expanding trainees’ exposure to the health services area. In Spain, for example, one respondent mentioned that they plan to bring in experts to offer training in the areas of management, planning, and systems analysis.

6.7 Impact on the Public Health System as a Whole

Although respondents in all of the FETP site visit countries feel that a need for additional epidemiologists still exists, most are in agreement that the epidemiologists trained by the FETP thus far have had a noticeable impact thus far on the quality of their national public health programs. Particularly in the countries with long-established programs, FETP alumni are functioning at multiple levels within their respective public health systems and are applying epidemiologic principles and practice to the identification and resolution of important public health problems, such as HIV/AIDS, nosocomial infection, polio, malaria, and dengue fever. Increasingly, FETP alumni consider behavioral risk factor reduction within their purview, and intervention programs developed by FETP graduates (such as the smoking cessation program developed for the Navy in Thailand) are addressing an ever broader range of public health issues. While they themselves may not yet be among the actual decision makers, FETP graduates are nevertheless providing input into health policy decisions at both the ministerial and the provincial levels.

Table 6.4 Respondent Views on the Benefits of FETP Training: Producing Graduates Skilled in Health Systems Analysis

Thailand
FETP graduates have also been involved in health care reform and AIDS, TB.
[The fact that there are] no major effective changes in health services due to the FETP may be due to (1) bureaucracy and (2) lack of direction.
Changes effected by graduates in health care delivery and health services are not as clearly seen.
The Philippines
I can give you a few examples [of changes in the use of epidemiologic data for program evaluation]. Now there is expanded immunization program that was evaluated on the basis of FIC. The success of this program was measured by the number of fully immunized children.
I think [FETP has helped effect changes in the health care delivery systems] because as I have told you we analyze data. This has become more specific and in depth. For example, immunization studies, environmental health and sanitation studies. Also studies of disaster-related diseases are important. FETP really helps us with this in terms of management of evacuation centers and resettlements.
[Examples of changes in health service delivery include the fact that] now hospitals and provinces routinely report diarrheas and do rectal swabs. Only provincial hospitals have culture capabilities, though.
I have not seen [changes in the health care delivery systems]. I have not been here long enough, maybe.
Spain
Keep in mind that the graduates come from positions where they are active in surveillance and outbreak investigations. They come from the service sector, they don't come from planning or management positions. The program therefore seeks to improve their ability to do the jobs that they already have.
Setting priorities? Their second year [the FETP graduates] always work with the director in the community in areas that they [the community health directors] have identified as a priority. For example, in cancer registries. [Because our system has nearly universal health coverage] I think that having the community health director identify the problems work well.
[The FETP is] not placing emphasis on system analysis, but rather on control of infectious diseases and the surveillance. These other areas are not well developed.
[After graduation] There is no change in program management, decision making, planning and evaluation, nor in system analysis.
[FETP has brought changes in] information systems, yes, other systems no.
We have done little in these areas [management, planning, system analysis]. We are bringing in someone now from labor and from mortality; then we might see changes in these other areas. But not so far. They haven't been priority areas.

Respondents recognize that the FETP program produces quality public health physicians who have a distinctly different perspective from that of academically trained health professionals. FETP trainees receive more practical experience than is possible in an academic setting and, as a consequence, their approach to their work is firmly grounded in the real-world context. They learn early on that “you need to work hard before anything can happen,” as one Thai respondent put it. Health program administrators rely on FETP-trained graduates in ways they do not rely on university-trained epidemiologists for fast and accurate assessments of critical public health situations. A Philippines respondent explained the difference between FETP-trained epidemiologists and others:

I come from academe. This is not an academic program. I can feel the difference. They have a very practical perspective where they go with recommendations. I also think that the new emphasis on the economics, communication, relations with the press, really improves their ability to intervene in the public health sphere.

Despite its applied, field-based orientation, FETP training nevertheless combines well with other types of training, providing a suitable complement to more clinical or academic degree programs, such as the MD or the MPH. As a Spanish respondent notes, “The students [in the Spanish FETP] already have a base, but the course adds to it in a way that corresponds well with what we are doing and what we need. ... It opens the mind to studying new problems.” At the same time that the FETP is raising the public health consciousness of academicians and clinicians, it is providing a more scientific basis for public health action. This highly field-oriented program is credited by one respondent with stimulating “the academic consciousness of all levels of the Ministry of Public Health” in Thailand. According to this respondent, the program has led to recognition of the need for epidemiologic research and data for good public health management, while also enhancing the prestige of scientific and epidemiologic approaches to good public health practice.

As health systems in the study countries move toward decentralization, FETP is contributing to the process of change by diffusing infection control and preventive medicine knowledge and skills from the central authorities to health officials and workers in the outlying provinces and districts. In the words of a Spanish respondent, the program is creating a new cadre of “field staff working from a more skilled base,” to augment the more theoretically and quantitatively trained public health administrators in the districts, who often have little knowledge or experience in conducting field investigations. As each community sends one or two staff members per year to FETP, the ranks of this new group of professionals will begin to swell.

A perception exists that among the central health authorities “there is not always an understanding of local issues and perspectives” X a matter of growing importance in an era of decentralization. Yet as some FETP graduates assume major roles in provincial health systems and as others who have served in the provinces during their training become ministerial program managers, communication between the center and the periphery may be expected to improve. A respondent in Spain, for example, already observe that “it is much easier to communicate and coordinate with those communities where we have a graduate. The difference is like night and day.”

As was the case with the impact of the FETP program on individual graduates, a number of respondents felt that the primary impact of the FETP program on the public health system as a whole has been in the area of “ways of thinking — learning to think in an epidemiology framework.” In the words of a Thai respondent, the FETP’s public health approach to surveillance and outbreak investigation has “increased the use of epidemiology for multiple functions.”

A respondent from the Philippines stressed the breadth of the graduates’ training, which makes them “an asset to wherever they are going.” Their training prepares them to “go out and interact with all sorts of people,” from local health professionals and the media to Department officials and international scientists. Another respondent from the same country, a local-level consumer of FETP services, highlighted the importance of the graduates’ guidance in the area of infection control, citing particularly their action-oriented recommendations and the importance of these for effective allocation of limited resources.

6.8 Suggestions for Improving the Public Health Usefulness of the FETP

Table 6.5 summarizes areas where respondents think the FETP might contribute in the future of public health in their countries.

Proactive surveillance. Respondents expressed a wish to move from a reactive to a proactive mode in the area of surveillance. They envision surveillance systems that will help them identify problems in advance of a crisis so that they can advise communities about preventive measures rather than waiting for a crisis to occur.

Surveillance for non-communicable health conditions. Respondents have identified a need for surveillance of other conditions beyond acute, infectious disease. They feel new surveillance

Table 6.5 Respondents' Views Regarding Areas FETP Training Should Address in the Future

	Thailand	The Philippines	Mexico	Spain
Active Surveillance		<p>"... we would wish that there are more proactive activities so that we are able to advise the different health departments from the barangays (municipalities) to the province to the region. ... What I mean is that we would not wish to get information from the newspapers and be reactive." [Ministry of Health Official]</p>	<p>"[The trainers] gave us a clinical perspective - how to take a clinical history, how to collect the data. They created this clinical sensibility in us. But not the capacity to coordinate an epidemiological strategy to address problems in populations." [Graduate Focus Group Participant]</p>	<p>"... the training we have had [in the past] has been very theoretical, and very oriented towards a passive surveillance, only looking when a problem surfaces. There has been very little active surveillance nor do we see an orientation towards prevention. ... The need for a broader surveillance approach, what I refer to as public health surveillance versus epidemiological surveillance, is not accepted by everyone. FETP is a means to achieve this change." [Ministry of Health Official]</p>
Non-Infectious Health Conditions	<p>"There is still a lack of people in non-communicable disease - quantity not quality is a problem." [Focus Group Participant]</p>	<p>"In terms of surveillance, I see expansion into chronic disease in the future. Now CVD is increasing and cancer and renal disease are in the top 10 causes of morbidity and mortality." [Ministry of Health Official]</p>	<p>"There are [accident] registries, but few accidents report to them, although we know that a lot occur. We need to train providers to report them. ... training in worker health, those in factories, almost doesn't exist." [Ministry of Health Official]</p>	<p>"[Non-infectious disease is another area] where FETP does not factor in. ... It wouldn't be bad to address other types of health risks. I don't know if they will add mortality indicators, for example. Maybe we need more of a mix." [Ministry of Health Official]</p> <p>"Chronic diseases is something we can move towards, new models." [Ministry of Health Official]</p>
Environmental Health	<p>"Areas where expertise is still needed include environmental hazards (nuclear, chemicals, explosives) and disasters." [FETP Graduate]</p>	<p>"There are many impending issues here. For example, clean water is a real problem. We need to focus on environmental health." [Ministry of Health Official]</p> <p>"I am concerned about environmental degradation related diseases - toxic waste. This requires continuous monitoring and surveillance. FETP does not currently have the expertise or equipment to address this issue." [Ministry of Health Official]</p>		<p>"... environmental and occupational health [are areas where FETP training is lacking]. There is a great potential to grow and expand into these other areas where it is clear that we will need trained professionals. ... There are social pressures to address risks associated with electromagnetic fields, nuclear energy, etc. We are not yet in a good position to respond to these pressures." [Ministry of Health Official]</p>

	Thailand	The Philippines	Mexico	Spain
Occupational Health			<p>“In occupational health [trainees] need to understand the risk factors, the mechanisms of exposure, how to implement an intervention to reduce risks and exposures. ... For example, injuries due to cuts or exposures to infectious diseases in the work environment - how to see risks in these environments and prevent them.” [Ministry of Health Official]</p>	<p>“Responsibility [for workplace health currently] lies with the Labor Ministry. But there was a recent law passed giving the Ministry of Health [permission] to participate in occupational health and we are anticipating that change.” [Ministry of Health Official]</p> <p>“There is a recent new law addressing occupational health risks. This is opening up a new relationship between workers and employers with respect to their health.”[Ministry of Health Official]</p>
Management and Administration	<p>“It is important for trainees to learn how to work with others with different attitudes, so training in management skills would be helpful. FETP did not prepare me for this.” [FETP Graduate]</p>	<p>“It would be good if the program could offer an overview of public health administration and public policy, too.” [Ministry of Health Official]</p>	<p>“Above all administratively, I needed to know how to coordinate, how to manage people. We need to mobilize them to take action. How to direct them. To me this is the most important thing. This is what I missed (in the program).” [Graduate Focus Group Participant]</p>	<p>“Where [FETP participants’ abilities were lacking were in the ability to manage social concerns and scares, how to manage a crisis. How to use data to warn people.” [Ministry of Health Official]</p>
Program Design and Development	<p>“Current challenges include learning how to strengthen the decentralized system; there is a need for an FETP presence in provincial offices and then for this presence to be extended to primary care. This is in addition to needs for new areas of endeavor, such as the need to develop effective intervention programs.” [Ministry of Health Official]</p>			<p>“[FETP participants lack] an active pursuit of knowledge of the public’s health in their communities. I’m not sure they know how to do a health analysis of their community, how to be proactive, in other words.” [Ministry of Health Official]</p> <p>“What we want with FETP is to go beyond epicrisis. Epicrisis means that you put out the fire but the conditions that led to the fire still remain.” [Ministry of Health Official]</p>

	Thailand	The Philippines	Mexico	Spain
Policy and Decision Making	“Public health issues presently being addressed by FETP graduates include using data for making health decisions and to assess existing situations, areas not sufficiently covered in the curriculum.” [Ministry of Health Official]	“When we got back to our jobs, employers had huge expectations of us. They saw us as decision makers and policy implementers. So I really had to struggle with this, as did many others. I really needed additional types of training but the basic tools helped me do a lot.” [Ministry of Health Official]		“The politician distrusts the technician. This has social repercussions. The epidemiologist has a bomb in their hands. The technician needs to know how to do a good regression analysis but that is not sufficient. Their work is not isolated. The information they have can be converted into either bad or good bombs. It has to be managed appropriately. Maybe this could be taught in FETP.” [Ministry of Health Official]
Health Economics	“Health economics and health care financing are not covered and perhaps should be.” [FETP Graduate]	<p>“One important tool would be medical economics. We covered it a little. It would really help with long-term programs so that we could talk to the implementers in terms of costs and benefits. Then we could probably convince them.” [Focus Group Participant]</p> <p>“I think that the trainees should study cost-benefit analysis. I do this kind of thing now so that I can run my office like a business. I think the trainees need this so the program manager should add it to the program.” [Ministry of Health Official]</p>	“[The program] could focus more on a specific area, like economics, looking at an illness that we have found. But we have not yet arrived at this point. This interaction with a cost-benefit or cost-effectiveness analysis doesn’t exist.” [Trainer Focus Group Participant]	
Planning and Evaluation	“Evaluating the success of interventions is a critical component of public health practice. People do not always cooperate. Technical workers don’t necessarily understand intervention and control procedures.” [299-4]	[After my experience studying abroad] I am preparing a module for [the trainees] ... about program evaluation. ... I think that most of us graduates lack the necessary information and knowledge on program evaluation. This module is designed for [trainees] to use along with lectures.’ [Ministry of Health Official]	“The entire area of hospital epidemiology in general [is lacking from FETP training]. Also, clearly that which has to do with the assurance of the quality of medical care in all areas. ... They use indicators developed in other countries ... [that have] nothing to do with the quality of the hospital. ... They need to know how to use indicators to evaluate quality. Without this, they can’t establish surveillance indicators.”[Ministry of Health Official]	

	Thailand	The Philippines	Mexico	Spain
Behavioral Science	<p>“FETP participants were unprepared for the wide range of skills and activities required of those posted in the provinces. Their focus ... was too narrow, and they did not recognize the important role of behavioral sciences and qualitative research in epidemiological work with communities.” [299-4]</p> <p>“... lifestyle and social status issues and health economics are gaining increasing importance. The new situation requires the FETP to work with sociologists and behavioralists.” [Ministry of Health Official]</p>	<p>“There is the issue of the importance of behavioral science. I think this dimension should be added to the didactic portion of the [FETP] program. This would certainly help us with the dissemination of health information.” [Ministry of Health Official]</p> <p>“I think a good suggestion might be to have someone that can be consulted about behavioral science issues. We need to be able to convince the public to change their behaviors if they are risky ones. More of a focus on health education would certainly help.” [Focus Group Participant]</p>		
Team Work and Leadership Skills	<p>“Skills and teamwork techniques could be better developed. Knowing how to look for what you need, who can help you solve problems.” [Focus Group Participant]</p>	<p>“We need to be able to arm ourselves in how we can convince local executives so that we can put information into something more fitting their perspective.” [Ministry of Health Official]</p>	<p>“Up to a certain point, [the residency] was directed toward leadership. But it lacked a real program of leadership. It was limited in administration. It did not teach us how to develop liaisons with those who make decisions. And when we arrive at work in areas that are very operative this is a lack.” [Graduate Focus Group Participant]</p>	

	Thailand	The Philippines	Mexico	Spain
Other		<p>Emerging and re-emerging diseases. “[In the future] we may be faced with unanticipated challenges like emerging or re-emerging diseases. This may be one of our weaknesses.” [Focus Group Participant]</p>		<p>Tobacco control. “We have activities [in the area of tobacco control] but it is not an area we have done a lot in. We should do more. It is very ingrained in society.” [Ministry of Health Official]</p> <p>Tumor registries, AIDS. “[The FETP could make additional contributions in] tumor registries. We don’t have one but could use one. AIDS is another problem. We have problems with vertical transmission from mother to child, and through injection drug use. Other problems facing us are tuberculosis and the growth/aging of the population.” [Ministry of Health Official]</p>

systems should be developed to monitor chronic diseases (such as cancer and diabetes), trauma and injury, occupational and environmental health.

Management and administration, program design and development, planning and evaluation. Because the majority of FETP graduates will end up in positions with administrative responsibilities, either in the districts and provinces or within their ministries of health, a need for additional management and administrative skills was identified. In their future work, FETP graduates will need to be able to plan and evaluate programs, as well as design, implement, and monitor interventions and systems.

Policy and decision making. Whether or not they themselves become decision makers, FETP participants need improved understanding of policy and decision-making procedures and mechanisms in order to do even surveillance and outbreak investigation effectively. They must know how to convince policy makers of the need for public health action.

Health economics. In an era of diminishing financial support for public health, an understanding of health economics principles is essential to guide effective allocation of limited resources.

Behavioral science. Particularly in the two long-established FETPs (Thailand and the Philippines), a need for an understanding of basic behavioral science principles has been recognized. Life style and social issues are increasingly placing populations at risk for adverse health conditions, and an understanding of the mechanisms of behavior change is critical for the development of effective health communication messages and materials.

Team-building and leadership skills. Even in the course of the traditional FETP activities of surveillance and outbreak investigation, team-building and leadership skills are important for the mobilization of staff and health professionals in support of these activities. Respondents felt they could use additional preparation in these areas.

The need for additional training in these areas reflects changes in the country populations, the health conditions currently threatening these populations, and the organizational structure of the health systems devised to protect them. The changes have brought about a need to broaden the approach to public health and to become more inclusive in terms of the issues public health professionals are required to address.

However, although considerable consensus exists across FETPs as to the importance of the above-mentioned areas, it does not necessarily follow that the FETP curricula should undergo drastic revisions. Various options have been identified by each of the FETP countries that range from expanding the FETP program through the inclusion of new modules to pairing FETP training with other degree

programs or types of instruction. Yet all of the FETPs studied are wrestling to some extent with these same issues of how to maintain the program's integrity and utility in a rapidly changing public health environment.

7.0 Professional Linkages through Dissemination and Networking Activities

One of the objectives of this evaluation is to assess whether FETP contributes to the creation of professional linkages as an outgrowth of the training. Here professional linkages are broadly defined as any kind of information exchange or collaborative work addressing public health problems. In this chapter we examine (1) the opportunities for networking available to FETP graduates, (2) contextual factors that affect the creation of networks, and (3) the role of FETP in developing and enhancing professional networks. We conclude with recommendations for ways to strengthen this component of the FETP based on information obtained through interviews with FETP graduates and trainers.

7.1 Professional Linkages and Networking Opportunities for FETP Graduates

In this section we discuss professional linkages and networking opportunities available to FETP graduates. We first discuss within-country linkages, then international linkages.

7.1.1 Within-Country Linkages

Professional linkages and networks can exist within a country among graduates of the FETP program, with other public health professionals in the country, and with a broader range of professionals and the public. Within the national public health community, linkages among FETP graduates, trainers and trainees can occur through:

- # Membership in regional and national epidemiology or public health organizations
- # Participation in and presentations at regional and national epidemiology meetings
- # Participation in regional and national surveillance networks
- # Preparation of technical briefs and reports on outbreak investigations for public health officials

- # Interaction with communicable disease groups (e.g., other groups within the MOHs)
- # Publication in national and/or local publications

The levels of contact among graduates vary across the five countries visited. All the FETP directors who responded to the survey were aware of ongoing professional communication and collaboration among graduates and were able to provide concrete examples of this from the preceding six months. Consistent with this response, nearly all graduates surveyed reported they had communicated with other FETP graduates in the past six months (Table 7.1).

Table 7.1 Communication among FETP Graduates

Site Visit Country	Total Respondents	Number of FETP graduates who have communicated with another FETP trainee or graduate from their country within the past six months	
		<i>n</i>	% (No. who have communicated/total respondents)
Mexico	58	50	86%
Thailand	35	31	86%
Philippines	23	23	100%
Spain	12	12	100%
Uganda	8	8	100%

Source: Form C

Importantly, however, there is not always an infrastructure to support continuing contact. In the Philippines, where most graduates are employed in the government sector, they have established an FETP Foundation that they are using to support efforts to contract their services as private individuals. They also have regular meetings involving both graduates and trainees. Spain and Thailand have active informal networks of graduates and are pursuing more formal arrangements for ongoing communication. The informal networks operate through friendships formed during the training and are supported through more formal structures such as annual meetings and in Thailand an FETP website. In Mexico, no formal structure for exchanges of information and resources among FETP graduates is in place. Site visit respondents indicated that informal contact is also limited although 86 percent of the graduates surveyed reported at least some contact in the last six months.

Not all FETP graduates have access to the Internet. Thailand has the highest rate of access (Table 7.2) and the Thai FETP has been successful in establishing a website. Internet access remains low in the Philippines and Uganda.

Table 7.2 Access to the Internet

Site Visit Country	Total Respondents	Number of FETP graduates who have access to the Internet	
		<i>n</i>	% (No. who have access to Internet/total respondents)
Mexico	58	30	52%
Thailand	35	26	74%
Philippines	23	10	43%
Spain	12	8	67%
Uganda	8	1	13%

Source: Form C

In all five countries visited, FETP graduates participate in epidemiology societies and/or public health associations at either the regional or national level, frequently presenting papers on public health topics. Respondents often told us that they had noticed a positive change in both the quantity and the quality of presentations by graduates of the FETP (Table 7.3). Topics covered in graduates' presentations are presented in Appendix C.4.

In the Philippines, much of the emphasis is on communication of FETP-trained professionals with public health officials and decision makers. This takes the form of presentations to public health officials (provincial and district health officers) regarding the outcomes of outbreak investigations, a quarterly bulletin and one-page report, and memoranda to the Secretary — short technical briefs that focus on a problem and recommend action. These briefs are used to inform the media as well as local health directors. With the devolution of the national public health system in the Philippines, an important role of FETP graduates is working with local elected officials who are responsible for many public health activities.

Table 7.3 Meeting Attendance and Presentations

Site Visit Country	Ever attended a meeting or conference on a public health- related topic		Ever given a presentation addressing a public health topic at a conference		Ever given a presentation at regional or national public health conferences		Number of presentations made by graduates at regional or national public health conferences		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	Total	Median	Mean
Mexico	53	91%	49	84%	40	69%	573	7	14
Thailand	33	94%	34	97%	30	86%	268	4	9
Philippines	22	96%	22	96%	16	70%	106	5	7
Spain	12	100%	11	92%	11	92%	40	4	4
Uganda	8	100%	8	100%	7	88%	25	4	3

Source: Form C

Thailand, which has the oldest FETP program, now has graduates placed in high-level positions throughout the health system. They are visible participants in many public health activities and much of their professional role depends on effective communication. FETP graduates are active participants in conferences, in surveillance systems, and in public health planning and management activities. However, they are limited in their networking abilities by time constraints. Respondents reported that graduates often work too hard to allow sufficient time for networking activities.

In Spain, the newest of the programs visited, graduates are not yet as well-connected at top levels as they are in Thailand. They are active in the Spanish Epidemiology Society but have limited influence in the larger public health community. Respondents were optimistic that their connections and influence would grow with time as graduates are employed in a broader array of positions and as curriculum changes increase their potential to influence decision makers.

Over one-half of all graduates in each country have submitted manuscripts to national and/or local publications (Table 7.4). Topics covered in graduates' publications are presented in Appendix C.5 at the end of this report. In Spain the percentage is very high at 92 percent, evidence of the high priority placed on publication. The high volume in Thailand and Mexico shows that graduates in those countries also continue to publish in the years after graduation.

Table 7.4 FETP Graduate Publication Activity at the National and/or Local Level

Site Visit Country	Graduates who have submitted manuscripts to national and/or local publications		Number of manuscripts submitted			Graduates who have had manuscripts accepted by national and/or local publications		Number of manuscripts accepted		
	<i>n</i>	%	Total	Median	Mean	<i>n</i>	%	Total	Median	Mean
Mexico	35	60%	221	4	6	35	60%	211	5	6
Thailand	22	63%	276	5	13	22	63%	274	4	12
Philippines	12	52%	27	3	2	12	52%	23	2	2
Spain	11	92%	73	5	7	11	92%	65	4	6
Uganda	6	75%	20	4	3	6	75%	16	3	2

Source: Form C

Professional linkages with other disciplines and the public can also strengthen public health within countries. This is an area in which many of the FETP programs have been struggling. Respondents recognize the importance of many of these links but feel that often there are serious deficiencies in the current networks in many key areas such as clinical health and medical specialty groups, laboratory systems, social and behavioral sciences, occupational and environmental health sciences, the public and the media, and elected officials.

There are some notable successes, however. In Thailand, the FETP program has worked with the Division of Nursing and the Division of Rural Hospitals to conduct nosocomial infection outbreak investigations. In addition, the Ministry of Energy has asked the FETP for assistance. In Mexico, the FETP trainees rotate to the national public health laboratory to gain an understanding of how laboratories can support their jobs as epidemiologists. When an outbreak occurs, trainees learn to speak directly with the laboratory staff for guidance on how to approach specimen collection and other laboratory-related aspects of outbreak investigation and control. In the most recent cohort of trainees, communication with the laboratory was reported to be excellent. Historically there has been an “oil and water” situation between epidemiology and laboratory science, but slowly there is some mixing. The link between the hospital and the laboratory is viewed by the program managers as a critical link for the long-term sustainability of the FETP in Mexico.

Linkages were also identified by respondents as playing an important role in identifying and creating field opportunities for FETP trainees. In Thailand, for example, several respondents indicated that forging ties with health professionals in the provinces may help to create more opportunities for training in surveillance systems. Currently, the Division of Epidemiology's surveillance system is the only system with which the trainees in the Thai FETP have experience. Respondents from Mexico pointed out that linking the FETP with other departments and disciplines would help the program obtain more opportunities for residents to do field investigations.

In the Philippines, emphasis in training has been placed on working with the media. Respondents attribute this to strong support of media relations by the President of the Philippines. His sensitivity to the press is transmitted to all of his cabinet officials. In the past, the Department of Health had problems with events being exaggerated by the media. Now, the media call health officials before a story is released. The FETP has worked with the media to explain the basic principles of outbreak investigation. Participation in radio interviews is a requirement for FETP graduates. Respondents feel that FETP graduates are able to meet with the press and use data correctly to answer their questions. As noted above, there are important links with local-level elected officials.

In general, the FETP graduates in Spain do not feel that they have been successful in these areas as yet, although there are isolated success stories. During our visit, it was clear that the program, which is still very young, is going through dramatic changes in the curriculum that are in part based on these perceived deficiencies. They are actively developing and implementing curricula to introduce students to occupational and environmental health issues. They are discussing strategies for involving the media and public health decision makers in the FETP training so that trainees could become directly acquainted with people in such positions. They are considering structuring curriculum changes in a way that would provide former students with opportunities for further training in areas where they feel that they are deficient. Continuing contact with CDC is viewed by the Spanish FETP program as essential to their ability to adapt and improve.

7.1.2 International Linkages

The strongest international links of FETP programs are those directly with CDC. Strong connections between FETP organizers and CDC existed at some level prior to FETP and were instrumental in generating the FETP in the first place. With the implementation of the FETP programs, these links have become stronger and have broadened to include other institutions in the United States.

For example, both Thailand and the Philippines are working with UCLA in support of AIDS/HIV sentinel surveillance activities, and a Philippine instructor has attended Emory University to receive training in international public health management.

Evidence of the strong connections between FETP programs and CDC is provided in the graduates' publication of articles in the *MMWR* and presentations made by graduates at CDC (Tables 7.5, 7.6).

Table 7.5 FETP Graduates' *MMWR* Publication Activity

Site Visit Country	Total <i>n</i>	Number of graduates who have submitted manuscripts to <i>MMWR</i>		Number of manuscripts submitted			Number of graduates who have had manuscripts accepted by <i>MMWR</i>		Number of manuscripts accepted		
		<i>n</i>	%	Total	Median	Mean	<i>n</i>	%	Total	Median	Mean
Mexico	58	12	21%	21	1	2	12	21%	18	1	2
Thailand	35	3	9%	8	3	3	2	6%	5	3	3
Philippines	23	3	13%	5	2	2	3	13%	5	2	2
Spain	12	4	33%	7	2	2	4	33%	7	2	2
Uganda	8	0	-	-	-	-	-	-	-	-	-

Source: Form C

Table 7.6 Presentations Made at CDC by FETP Graduates

Site Visit Country	Number of graduates who have given presentations at CDC		Number of presentations made by graduates		
	<i>n</i>	%	Total	Median	Mean
Mexico	12	22%	29	1	2
Thailand	7	20%	7	1	1
Philippines	16	70%	27	2	2
Spain	7	58%	7	1	1
Uganda	-	-	-	-	-

Source: Form C

Further evidence of the strength of the connection is provided in the number of graduates who indicated they had communicated with an employee of CDC in the past six months (Table 7.7).

Table 7.7 FETP Graduates' Communication with CDC Employees

Site Visit Country	Total Respondents	Number of FETP graduates who have communicated with an employee of CDC	
		<i>n</i>	% (No. who have communicated/total respondents)
Mexico	58	19	33%
Thailand	35	12	34%
Philippines	23	10	43%
Spain	12	5	42%
Uganda	8	3	38%

Source: Form C

Opportunities for FETP graduates to interact with public health professionals from other countries have been more limited. There is little evidence of any kind of an international network of FETP graduates, independent of CDC. The annual meeting of FETP directors provides an opportunity for some contact. However, the graduates themselves do not feel that they have had appropriate opportunities to learn about the activities of their counterparts in other countries. Only a small percentage reported that

they had communicated via phone, fax, or email, let alone face-to-face with another FETP trainee or graduate from a country other than their own in the past six months (Table 7.8).

Table 7.8 Communication with FETP Graduates of Other Countries

Site Visit Country	Total Respondents	Number of graduates who have communicated with another FETP trainee or graduate of a country other than their own	
		<i>n</i>	% (No. who have communicated/ total respondents)
Mexico	58	10	17%
Thailand	35	5	14%
Philippines	23	4	17%
Spain	12	4	33%
Uganda	8	2*	29%

Source: Form C

*One response to this question was missing for Uganda

There is some evidence of networks forming at a regional level. For example, Thailand plans to make the FETP program a WHO Collaborating Center for training. This will expand support for the program and will make it an international focal point for epidemiology training in Asia. Spain has begun to open up their program to students from other European countries. The program in Spain also has been in contact with another Spanish-speaking FETP country, Peru. They have also become active in a European epidemiology group, European Program Intervention Epidemiology Training (EPIET). This program is based in Belgium and is comprised of EIS graduates. Respondents in Thailand mentioned a close working relationship with the International Clinical Epidemiology Network (INCLIN). This has included discussion of curriculum issues and the past participation of INCLIN faculty in FETP courses. There is no formal relationship between the programs, however.

Attendance at international conferences varies across the five countries but is not uncommon (Table 7.9). Many FETP graduates have also had manuscripts published in international journals other than the *MMWR* (Table 7.10).

Table 7.9 International Conference Attendance by FETP Graduates

Site Visit Country	Ever attended other (non-CDC) international meetings or conferences		Number of other international meetings or conferences attended			Ever given presentations at other international conferences		Number of presentations made by the graduates		
	<i>n</i>	%	Total	Median	Mean	<i>n</i>	%	Total	Median	Mean
Mexico	34	59%	297	7	9	29	50%	305	5	11
Thailand	33	94%	197	5	6	22	63%	86	3	4
Philippines	20	87%	54	2	3	17	74%	47	1	3
Spain	9	75%	14	1	2	8	67%	15	1	2
Uganda	8	100%	19	2	2	7	88%	12	3	2

Source: Form C

Table 7.10 Publications by FETP Graduates in International Journals

Site Visit Country	Number of graduates who have had manuscripts accepted by other international publications		Number of manuscripts accepted		
	<i>n</i>	%	Total	Median	Mean
Spain	7	58%	20	1	3
Philippines	7	30%	25	1	4
Thailand	14	40%	42	3	3
Mexico	26	45%	129	3	5
Uganda	5	63%	14	4	2

Source: Form C

During our visit to Thailand, the longest-standing FETP program, respondents emphasized the importance of developing additional international linkages. They feel that they have achieved a high level of technical skills and now need to focus on developing and expanding international networks. In contrast, Spain is still focused internally on developing the skills and networks to permanently establish the program and develop its reputation within the country. They are searching for ways to improve the curriculum to better respond to public health needs in Spain. Contact with the international community is not yet a high priority for them.

7.2 Contextual Factors that Influence the Development and Maintenance of Linkages and Networking Systems

The contextual factors described below represent challenges for many FETP programs as they work to develop and maintain professional linkages and networks. An understanding of these factors can lead to a better appreciation of the successes that have been observed to date and the challenges that still remain.

In the development of international networks, there are several factors that can be barriers. These include:

- # Language differences,
- # Inadequate communication technology, and
- # Limited financial resources to support travel.

Fourteen of 16 FETP programs are located in non-English-speaking countries, four of them Spanish-speaking. The FETP program requires communication in English as a condition of participation, and CDC assumes that this capacity is present when developing support for programs. Meetings are conducted in English and documents are prepared in English. This is probably the only practical way for CDC to support the program overall. While FETP participants normally can communicate in English, their ability to perform at a professional level in this language varies considerably. This is less of a problem for publications, where editorial support from consultants can be obtained.

Inadequate communication technology and lack of the necessary infrastructure to support communication can impose limits. Access to the Internet remains limited in many countries, thus restricting opportunities for communication at a distance. While this will undoubtedly improve over time, at present it cannot be assumed that trainees in all countries have access to the Internet.

Limited financial resources to support travel restricts in-person communication. For example, WHO support was important for initiating the FETP program in Thailand. The withdrawal of this support after the first five years has been problematic for Thailand, since it has limited the program's ability to provide fellowships for travel to CDC as part of their training. The opportunity to work directly with staff at CDC was highly valued by participants.

Professional linkages and networks within countries are also affected by contextual factors. While lack of communication technology and money for travel can play a role, other significant factors

limit intra-national linkages. Several countries (Spain, Mexico, the Philippines, and Thailand) have experienced recent decentralization of their health systems. For some, this has created communication and coordination difficulties at the national level in responding to outbreaks and in addressing more broadly the public health challenges within the country. Many of the difficulties that FETP programs have had in connecting with other medical specialties are not unique to FETP, but are products of the long-standing separation of public health and clinical practice.

7.3 FETP's Role in the Development and Maintenance of Linkages and Networking Systems

Within countries, it is often difficult for participants to separate the connections that the program has provided from what they individually might have achieved without them. Prior to the FETP, both Mexico and Spain, for example, were trying to build internal networks to strengthen ties among regions and between the central government and the regions. The FETP has provided a mechanism to support those efforts. The Spanish program is still new, but respondents feel that the program is already having an effect as a result of informal networks established as trainees from various regions come together to participate in the course. The program directors have noticed that, in regions that have a graduate, communication with the central institute is quicker in the event of an outbreak than in regions that do not have a graduate. Mexico is interested in establishing residencies at the state and regional level for trainees in addition to the national residencies that have comprised the program to date. They report that interest is high in the states and regions in having trainees and they view this as an essential step for the success of the newly decentralized health system.

The FETP has contributed to increased communication between graduates and other public health professionals nationally through support for conference participation, fostering the development of presentation skills, and encouraging publication by trainees. The FETP's role in building bridges to other medical specialties is less clear. In Mexico, the program has helped to close an historical gap between epidemiologists and laboratory practitioners. Respondents provided examples of FETP residents working with clinical providers to reinforce the role of public health in clinical practice, an improvement that they attribute to the FETP. Thailand can also point to some successes in this area. It is not clear the FETP has yet played that role in the other countries visited.

Since 1973, there has been an increase in the acceptance of epidemiology and epidemiology-based thinking in Thailand. WHO and the World Bank have had some impact, but much of this higher profile for epidemiology is credited to the FETP. FETP graduates are not seen as Ministry bureaucrats.

They are viewed as critical thinkers who can do evidence-based decision making. If a unit within the Ministry has an FETP graduate, this tends to be the person who is called on to disseminate information to decision-makers. We were told that the program has contributed to raising the profile of the Ministry.

The role of FETP in creating linkages with professionals in other disciplines appears to be in its infancy. We found evidence of a lot of interest in developing relationships and networks with a variety of other disciplines but only limited evidence that these connections have been established.

The establishment of FETPs in the participating countries has been very important in developing and strengthening ties with CDC and other health organizations in the United States. Connections through the CDC consultant during the first years of the FETPs have led directly to important contacts and collaboration with public health researchers at CDC and elsewhere. Although FETP has not yet had a large impact on broader international networks, this is a role that the long-standing programs are eager to see grow and expand.

7.4 Recommendations for Enhancing Linkages and Networking Systems

Several opportunities for enhancing professional linkages and networks were noted by respondents. Greater international status is viewed by some participants as important to the long-term sustainability of FETP. To improve the capacity of FETP graduates to participate in international epidemiology and public health networks, we heard the following recommendations:

- # Create a network of FETP centers worldwide. CDC's role should encompass helping develop the basis for an international epidemiologic network. [One respondent suggested that this report can serve as one mechanism to create a link among FETP programs.]
- # Increase collaboration with universities in participating countries, capitalizing on FETP's area of expertise in population-based health issues.
- # Increase the role of FETP as a consultant to other components of health ministries and regional and provincial health agencies, again capitalizing on its unique areas of expertise.
- # Increase opportunities for FETP graduates within a country to meet and exchange experiences. This could be accomplished through national meetings that FETP graduates frequently attend.
- # Provide language and editorial assistance for publications by FETP graduates in English-language international journals.

- # Provide support for a formal program of travel and study abroad by FETP trainees. Such support could be based on a competitive process administered by CDC or an advisory committee of outside experts.

8.0 Sustainability of FETPs

In this chapter, we present data on the sustainability of FETP programs once the period of CDC support has ended. We present a brief overview of the status of all FETP countries according to selected sustainability indicators. We then discuss facilitators and barriers to sustainability in the five FETP site-visit countries.

8.1 Assessment of Sustainability

Sustainability refers to the capacity of FETP programs to continue to function after an initial period of substantial outside technical assistance. Sustainability does not require that there be no outside assistance, but only that the program be well enough established to function in its absence. We defined two indicators of sustainability in the protocol for this evaluation:

- # The proportion of autonomous FETPs that continue producing trainees two years after becoming autonomous
- # The proportion of autonomous FETPs that are institutionalized

The operational definition of autonomous is that the FETP program operates without a CDC consultant or other regular technical support supplied by CDC. Institutionalization means that a program has leadership by a national director, an organizational identity within a national institution, a budget and authority to commit it, and self-sustaining cycles of graduation (Music and Schultz 1990).

As of late 1997, nine of the 14 FETPs (64 percent) had discontinued their relationship with an external CDC consultant at least two years ago. Although Spain will not reach the two-year mark until the summer of 1998, it is listed as autonomous because there is no indication that the program will discontinue operating by that time. This brings the total number of autonomous FETPs to ten.

Of the autonomous FETPs, seven meet the definition of institutionalized provided above, although the stability of organizational location and funding is more certain in some countries than in others. The seven institutionalized FETPs are: Australia, Canada, Indonesia, Mexico, Spain, Taiwan, and

Thailand. All of the FETPs for which data were available, with the exception of the Italian and Peruvian programs, were producing graduates in 1997.

These indicators — autonomy, institutionalization, and ongoing production of graduates — demonstrate that as a whole the multi-country program is doing well in moving individual FETPs into an autonomous status. Seventy-one percent of the programs have become autonomous and most of those that have not are among the more recently initiated programs. Furthermore, 86 percent of the programs continue to produce graduates. However, only 43 percent of the programs have so far met the aforementioned criteria for institutionalization.

The following sections of this chapter will discuss some of the facilitators and barriers to program sustainability based on the experiences and opinions of our respondents in the five site visit countries. We conclude with recommendations based on these findings.

8.2 Factors that Contribute to Sustainability of FETPs

It is too soon to tell how many of the FETPs will remain self-sustaining over time. However, it seems clear from the data obtained from our site visits that prospects for sustainability are improved to the extent that:

- # A need for trained epidemiologists continues to exist
- # The program remains responsive to the public health needs of the country
- # Graduates of the program are able to successfully address those needs
- # Public health decision makers in the host country are aware of the role of FETP in meeting those needs

All FETP programs were initiated in response to a perceived need for additional epidemiologists, particularly field-level epidemiologists. Our findings show that this need has not been saturated. The need for epidemiologists in FETP countries persists and has even increased in recent years because of the decentralization of health services taking place in these countries.

Respondents in many of the countries visited stressed that there are still many health workers who do not understand basic epidemiologic principles. Although FETPs in the countries visited are in the process of reaching a critical mass of applied epidemiologists, there are still not enough epidemiologists to make maximum use of surveillance in disease prevention and control or address the full range of public health needs. For example, the Thailand MOPH would like physicians with FETP training to be placed in

all components of the Ministry and in all provinces. To date, too few graduates have been produced by this FETP to provide this level of coverage.

Especially important for the survival and long-term health of FETPs is the capacity of the FETP model to respond to a critical need for applied field epidemiology training at the community level under newly decentralized health systems. For example, in Mexico we heard that the country's need for increased epidemiology capacity has become more acute as the management of health services has shifted to the state level. In all of the countries visited, the practice of public health generally, and epidemiology specifically, was being redefined in such a way that the FETP will need to adjust its focus from the national level to the regional or district level. The success of the FETP may depend on the degree to which it is able to do this in each of the host countries.

Respondents made clear to us that new regional and local health agencies cannot simply replicate operations from the national level. Rather, these agencies need knowledge of and information about public health problems at the local level in order to make decisions and develop solutions. Training in epidemiology for local health officers, who seldom know how to do outbreak investigations or epidemiologic research, requires a special approach. The Thailand MOPH tried to send health officers abroad for epidemiological training, but found that when the trainees returned, they were unable to readily apply their skills within their own country.

The sustainability of the FETP also is strengthened to the extent that the program fills a vital need that is not successfully met through other programs. The success of the program so far has been its ability to fill a gap left open by other in-country public health training programs. The research orientation of most academic programs means they have not been as oriented to specific public health needs in the field (outbreak investigation, disease control, etc.) as the FETP. The FETP has produced a new group of epidemiologists who can fill key positions in the health ministries of their countries. One informant mentioned that, in his country, the FETP's strength is proportional to perceived weaknesses in other parts of the public health system, such as the School of Public Health.

However, for the FETP to build and maintain the support of important public health institutions in their countries, it is important that they work out some kind of accommodation with alternate training programs. The difference cited most often between the FETP and MPH programs is, of course, the more field-oriented approach of the FETP. Most of our informants felt that the FETP in their country could be strengthened through stronger ties with university and hospital-based MPH programs, although they were averse to turning the FETP into an academic program.

Institutionalization implies that the FETP is placed in some part of the MOH or an academic institution that supports its mission by supplying staff, funding, and a national director. One respondent suggested adopting the CDC model, in which the FETP would have its own staff and laboratory support — a complete institution that could simultaneously provide training and service. We did not observe an FETP operating in this comprehensive manner in any of the five site visit countries, although several had created good relationships with laboratories and hospitals in support of training activities

The degree to which the FETP is known within the host-country health sector and the respect that it receives from important policy makers is a key factor in its sustainability. This is well-illustrated in the Thailand FETP. This program has a good reputation in Thailand and is well known outside of the MOPH. Leaders in the health sector who are not graduates know and respect colleagues who have completed FETP training. The activities of FETP graduates are visible enough within the country that other government ministries have sought out the program for help in addressing their own health-related problems. One respondent recalled that, in the early days of the program, non-FETP physicians sometimes were critical of the program, but that this has changed as graduates have reached higher ranks in the MOPH.

In the Philippines, the credibility of the FETP has been enhanced by its relative sophistication in working with the media in connection with investigations of outbreaks and emergency responses. The Philippine program is backed by an FETP board that helps provide the program with broad visibility. As in Thailand, the success of early participants and leaders in the program in reaching high-level positions in the MOH helps keep the program on the political agenda of key MOH officials.

In Mexico, the FETP is politically popular because it is perceived as a Mexican program rather than as part of any international agenda. An important theme in thinking about the sustainability of the Mexico program is the link that the FETP has been able to forge between field epidemiologists and both hospital and laboratory components of the public health infrastructure. This has provided the program with high visibility and support within the Mexican health system.

8.3 Barriers to Sustainability of FETPs

We consider barriers to sustainability from three perspectives: the national perspective, the programmatic perspective, and the perspective of the individual participants in the training program.

8.3.1 National–Level Barriers

Threats to sustainability at the national level come from uncertain political support within the national health system, an underdeveloped infrastructure for health, and funding limitations.

Continuing political support is necessary for maintaining the FETP over time. This is best assured by the movement of FETP graduates up through the ranks and into decision making positions in health ministries. Respondents in Thailand cited a high level of support for the program in the Ministry of Health, extended funding from the World Health Organization, and a growing number of FETP-trained epidemiologists in upper echelons of the MOPH as key factors in the sustainability of their program. About 50 percent of graduates of the Thai program are still in government service, many of them moving toward the Deputy Director level in the MOPH. Others are moving into positions of leadership in the provinces. This leadership of FETP graduates has led to development of an alumni network that respondents feel helps sustain the viability of the program.

Full recognition of the FETP may require more political support than is currently being provided by the health ministries in countries that, for now, have stable programs. For example, in one country, regional directors often request FETP graduates to work with them, but there is no official commitment of the health ministry to support this relationship. In another instance, competing for employment opportunities is complicated by different requirements for positions in public health administration than in clinical health administration. Under current hiring criteria, clinicians can compete with FETP graduates for public health jobs but the reverse is not true; FETP graduates are not able to compete for clinical health administration jobs. These political factors in employment and promotion affect the capacity of FETPs to establish a critical mass of graduates in key health positions.

Decentralization of the political and healthcare system has changed the political stakes for epidemiology. Increasingly the financial resources for public health are located in communities. Political and financial support for the program must therefore be sustained at both national and regional levels. Trainee recruitment can be affected because trainees, often employees of regional or local health agencies, must be given release time and at least some funding from localities in order to attend FETP training. Yet manpower shortages at the local level and a scarcity of funding to provide trainees' salaries during their absence can be difficult at the local level where resources are limited. In addition, returning trainees may command higher salaries due to their newly acquired skills, salaries that local health agencies may find difficult to meet.

The sustainability of FETPs may also be threatened by the downsizing of host-country MOHs and the change in the role of these central institutions away from direct service provision toward quality assurance and technical support of regional health organizations. For example, Uganda's MOH is currently dismantling its training component. If the PHSWOW had been located in the Ministry, rather than in a university, its sustainability certainly would have been jeopardized by this action. CDC and participating countries should be alert to such scenarios and take measures to confront situations like this by building inter-institutional teams of academics and national, regional and local health officials, thus broadening the base of political support for these programs.

Political threats to sustainability of the program may also come from other programs that perceive the FETP as competition for resources or as likely to reveal weaknesses in their programs. This may interfere with the stable division of labor needed to sustain an FETP and provide ongoing opportunities for trainers. For example, the medical and public health sectors have traditionally been separate in many FETP countries and forging connections between them has proven difficult.

A central problem related to the sustainability of the FETP is the lack of long-term strategies in some of the host countries for improving the public's health. Very often crises, not long-term planning, form the impetus for public health action. One respondent felt that this was a real threat to the sustainability of the program because "its survival is fed by opportunities." Lack of adequate public health infrastructure may contribute to this problem. It may be that FETPs will need to show that they can contribute to the development of long-term public health strategies if they are to survive.

8.3.2 Program-Level Barriers

Program-level barriers to sustainability are those aspects of program management and administration that impact on the resources available for field epidemiology training. Programmatic obstacles can include lack of a solid organizational identity, failure to sufficiently broaden the scope of the program to meet public health needs, inadequate support of trainers, competition from other programs, and lack of communication with clinicians and the public.

Permanent placement of the FETP in a Ministry of Health is a key safeguard against political threats to sustainability, but this kind of institutionalization may not be stable in countries with rapidly evolving health systems. The Philippine FETP is an example of this. In 1992, the program was institutionalized in the sense that there was a budget line item to support a training program. But the FETP cannot appear in the official organizational charts because of an absence of a legislative definition

of the program. At this time the FETP is in the Special Concerns division because it is one of the priority concerns of the Secretary. FETP staff would like to see it more formally established as part of the MOH so that they would have closer coordination with other units. This would strengthen networking and inter-program relationships. The program currently has adequate funding, good logistic support, and the backing of the current Secretary of Health. But staff feel that the absence of an organizational identity is a problem.

Closely related to this concern, we heard strongly felt opinions about the necessity to keep the program located within a health ministry in order to ensure that the program remains field-based and responsive to the needs of the country. Institutional location within a university setting is viewed as potentially jeopardizing the strong field orientation of the program, even though such a location might place the program in a stronger position to provide training resources. However, even as they resist incorporation into a university setting, FETP directors would like to see better integration of the FETP into the academic sphere in order to strengthen both the theoretical basis of the program and the linking of FETP graduates to national and international networks of health professionals.

FETPs are under pressure to broaden the scope of their training, and to think more seriously and actively about public health priorities in order to increase the value of the program to health ministries. In several countries, we were told that FETP graduates were not always broadly trained to meet current public health needs. Public health issues that are not sufficiently covered in the curricula include the use of data for public health decision making, occupational and environmental public health concerns, and needs assessments.

Inadequate support of trainers may limit the capacity of the FETP to continue providing training or to expand the training to meet changing needs. In many countries, FETP faculty positions are part of the responsibility of service-oriented staff in the health ministries rather than academic faculty. The academic and methodology background of the trainers is not always strong. But trainers seldom have opportunities to enhance their skills since they have so many other commitments. In one country, trainers with whom we spoke emphasized the importance of what they were doing as FETP trainers, but pointed out that they could only volunteer for a limited time without release time or a salary.

FETPs need the flexibility to broaden the content of the program to assure sustainability of the programs in the rapidly changing political environments surrounding health in many of the host countries. In one country, we were told that other agencies are developing epidemiological capabilities. If the FETP continues to be based on surveillance and outbreak investigations, these activities may be taken over by the regional health units, leaving the FETP without a niche. The FETP needs to counter this with a

national focus on disease causation and control, including risk factor assessment, and planning national health policies. In another country, we were told that there are real questions about the need for the current kind of training in the future. FETP will need to move into new areas and increase technical competencies if it is to continue to grow and develop.

A widespread lack of communication with clinicians and the public is an additional barrier to sustainability. The FETPs need to bridge the gaps between professionals in each of the key public health components: laboratorians, clinicians, and administrators. The Mexican FETP could serve as a model in this regard with its laboratory and hospital rotations. Attempts are being made to expand this program's training to include district-level rotations. Finally, the FETP must be able to convincingly explain the importance of epidemiology and why it should be supported.

8.3.3 Individual-Level Barriers

At the individual level, barriers to sustainability include lack of funding during the training period and poor career incentives for participation in the program. The absence of an academic credential is viewed by some as another significant problem, one that is related to the limited ability of graduates to use FETP training as leverage for advancement in their careers.

Support of FETP trainees, for salary and living expenses as well as the direct costs of training, is essential for continuation of the program over the long run. At present, trainees often struggle to maintain their participation in the program. Some receive all or part of their salaries from the national or regional health units that employ them. Many do not. Others maintain households for their families in home communities because the costs of living are prohibitive in cities where training is held. In Spain, trainees keep their salaries but need to apply for highly competitive research grants to pay their living expenses. In another country, one respondent told us that she sold her car to continue in the program after her employer took her salary to hire a replacement. There will, of course, always be some who are willing to make such sacrifices to take part in training. However, the need for such sacrifices do not bode well for the sustainability of a program over time.

In some host countries, politics may be more important than training for career advancement and good epidemiology less important than political affiliation. This limits the trainees' perceptions that the FETP will open career doors. Several respondents suggested that the best talent is often channeled into clinical epidemiology. Research careers are associated with high status and prestige, whereas field epidemiology is often of lower status. Participation is also affected to the extent that trainees must risk their current jobs to complete FETP training. Graduates may or may not have the same job waiting when

they return. Reabsorbing trained epidemiologists into practice at the regional and state level does not always go smoothly. Newly trained epidemiologists may be perceived by supervisors and colleagues as threats. Salary limitations due to slow promotion have led to waning applicant interest in the FETP in the short term. On the positive side, one career advantage of the program mentioned by respondents in several countries is that the FETP can move careers forward by providing opportunities for foreign training and participation in international networks.

A disincentive to making sacrifices in order to participate in the FETP in some countries is the lack of opportunity to earn a master's degree or other credential through the program. In many health ministries, at least some promotions depend on a degree. In the Philippines, for example, the FETP was able to obtain certificates for medical specialist positions. However, we were told that the FETP credential has not yet achieved the level of acceptance and compensation that it should have. Some respondents favor making the FETP a post-graduate training equivalent to a master's degree, perhaps adding a more academic component to the program. One person proposed that perhaps universities could send some students to the FETP for part of their training, creating a learning partnership between the two. Overall, however, respondents were fairly unanimous in their strong feeling that the FETP should not sacrifice its applied field orientation to the requirements of academic institutions.

8.4 Recommendations

In this section, we summarize some of the recommendations for improving program sustainability provided by respondents during our site visits. Most of all, respondents stressed that to remain vital, FETPs must evolve with time and adapt to changes in the health systems in which they function. Other suggestions included:

- # Develop a broad and precise consensus among local health players about what the FETP can do in the community, so that interest in the FETP comes from inside the community and not from outside.
- # Raise the profile of epidemiology and public health in FETP countries. One respondent proposed the development of a new research organization in the Ministry of Health that focuses on public health issues of national importance.
- # Help health administrators understand the importance of epidemiology as a public health science. Clinical epidemiology will not have an impact on the larger health issues, yet that is where the best people are heading. There needs to be greater recognition for field epidemiology.

- # Develop a better system to recognize the achievement of trainees in order to improve recruitment and attract young graduates.
- # Explore options related to distance learning as a mechanism to overcome the problem of time-away-from-work and the high cost to trainees of living in urban areas.
- # Incorporate material on the political realities of public health delivery and its implications for studying outbreaks into the FETP curriculum.
- # Introduce a requirement, ten years down the road, that regional epidemiologists be trained in FETP in order to be promoted.
- # Continue to seek specialized technical assistance to support efforts to broaden the training opportunities available to trainees and graduates. In some countries, we observed a great deal of capacity building in selected areas with technical assistance from CDC. Respondents see a continued role for CDC in providing specialized technical assistance on request on selected topics.

9.0 Conclusions and Recommendations

In this chapter, we discuss some of the most critical challenges that FETP/PHSWOWs are facing, summarize what we have learned in this evaluation, and suggest some implications of our findings for the FETP/PHSWOW. In the final section of this chapter, we present recommendations for CDC to consider as they move to strengthen existing FETPs and to bring other countries into the process.

9.1 Conclusions

On the basis of our study, we conclude that the FETP approach has been effective in creating a self-sustaining epidemiology training program at the national level in the countries that we visited. Four of the five programs are autonomous, continue to recruit and train graduates, and place them in the forefront of disease prevention and control in their countries. The fifth program visited, the PHSWOW program in Uganda, has all of the signs of becoming an effective resource for its country in the future. Moreover, FETP programs have created a cohort of technically prepared epidemiologists that are increasingly trusted by health officials who have worked with them in some capacity. Looking back over the experiences of these FETPs, we can see clearly that these programs have become stronger, more capable of achieving their own objectives, and more vocal as advocates for public health in their host countries.

This project is an evaluation of the degree to which the FETP, as conceptualized by CDC, has met its overall objective of augmenting the epidemiologic capacity of host-country agencies. The FETPs have tried to do this by helping Ministries of Health build sustainable high quality training programs for public health workers in applied epidemiology. Ideally, the long-range outcome of the FETP will be a professionalization of public health around the world that will move decision making around health issues from an intuitive and crisis-driven basis to one based on sound scientific principles and solid epidemiological understanding.

CDC's role in the FETP has been to help public health professionals in host countries in any way that it can. CDC helps them to negotiate the logistics and funding of start-up, provides technical assistance during the initial phase of the training program through an in-country consultant, and provides support as needed in moving the in-country programs to a secure institutional position in the Ministries of Health in which they are carried out. Additionally, CDC promotes development of an international

network of field epidemiologists by means of regular international meetings and information exchanges among representatives of FETP programs.

As is so often the case in public health, FETPs have arisen out of emergent needs and shifting political climates in host countries and at CDC. An important part of the CDC support of FETPs has been to simply get out of the way when necessary. Some countries need more assistance from CDC; some need less. CDC must always be learning on the job. Getting the right balance is difficult, and many people have, at some point, thought that representatives of CDC should play a different role. We probed for problems that host countries might have with CDC staff or consultants. Occasionally we were told that CDC should be more collaborative and less directive in the set-up phases of FETPs and in technical assistance. Some individuals in host countries experienced problems with individual CDC consultants, but this was not a recurrent theme. Generally, there was very little negative comment about CDC during our site visits or in our interaction with representatives of host countries at three international meetings. Most of those we talked to understood and were appreciative of CDC's efforts to help.

The twelve years since the first FETP was initiated in Thailand have been a period of dramatic change in health infrastructure and in the organization of public health in host countries as well as in the United States. It is difficult to overstate the impact of decentralization on the FETP. The program was founded to build epidemiology capacity in each participating country, largely in or in coordination with the national ministry of health. Yet in each of the countries we visited, the practice of public health, precisely the area in which applied epidemiology is used, is moving out of the national MOH and to the local level. This has impacted every aspect of the program: recruitment, the appropriate content of training, the overall public health usefulness of the FETP to the public health sector, and the nature of the networks that are needed to support high quality public health services. Moreover, the sustainability of the FETP model itself, as exemplified in its individual implementations, is critically dependent on the degree to which the program can evolve to meet the needs of a new kind of system.

9.1.1 Recruitment

Recruitment of countries into the FETP is an opportunity-driven and iterative process that depends on negotiating commitment and resources from organizations and institutions in host countries and/or from donor agencies outside of CDC. We advance an hypothesis based on our experience in this study — a key element in recruitment of countries is identifying a strong in-country “champion” for the program. We did not look at programs that failed, so we cannot discuss the causes of failure. We do note, however, that in all of the countries we visited, there was a committed person or group of people

who worked very hard to ensure that the FETP was nourished through the start-up phase and made a successful transition through implementation to autonomy. In other words, someone in a senior position was paying attention to the program even if that person did not remain directly responsible for it.

9.1.2 Quality of Training

When we began this evaluation, we expected to encounter differences of opinion around the correct balance of applied and theoretical training in the FETP program. We did encounter some discussion of this issue, particularly among trainees and recent graduates. But in the countries that we visited, this was less of an issue than we expected it would be. The applied focus of training is a key characteristic of the FETP that is almost universally supported in the countries we visited. There was strong support for the idea that the applied orientation of the FETP is producing a kind of public health practitioner that is not coming from other programs: a practical, problem-oriented brand of epidemiologist. Our respondents were clear that they did not want this to change.

Graduates responding to our survey and interviewed in our site visits reported good coverage of the core areas of epidemiologic method and theory in both the classroom and field components of the training program. Program coverage of management skills, such as planning, evaluation and budgeting and of dissemination and communication is less widely reported by graduates, although more graduates reported these for the field component than for the classroom component. This may mean that these topics were better covered in the field component. However, it may also mean that graduates remembered their field work better than they remembered the classroom part of the training. It is probably more important in assessing content of the curriculum to look at what skills they report using on their jobs.

Decentralization has meant that outbreak investigation — the core of the initial FETP design for applied epidemiology experience — is the responsibility of local health officials rather than representatives of the national ministries of health. This shifts the role of FETP trainees from direct outbreak investigation to a more facilitative role that involves technical consultation and training. FETP trainees need to learn sound epidemiologic methods, but the new situation places additional pressure on them. They must also have specialized expertise in public health topics (such as emerging diseases or chronic disease programs) as well as enhanced capabilities in training, policy, and resource management to support local officials in designing and implementing interventions. The role of FETP trainees as “outbreakers” becomes less viable as this function devolves to lower levels of the system. At the same

time, the epidemiological capability of lower level officials improves, at least in part because FETP graduates move into these jobs.

Surveillance is also moving to the local level. However, this will be more difficult to do successfully because the management of surveillance systems requires a high level of statistical and computer expertise, and because provincial level surveillance data is not adequate for many public health programs. Effective surveillance requires a broader perspective than a single locality provides, at least for communicable diseases that do not recognize political boundaries and for chronic diseases that require tertiary services for diagnosis — services unlikely to be available in most localities. For this reason, a national surveillance function can be expected to continue providing training opportunities for the FETP in the future.

9.1.3 Public Health Usefulness

The FETPs we studied were founded primarily in order to build epidemiologic capacity within the respective ministries of health. The Philippines FETP, for example, hoped to train people who would “devote at least another four years after graduation to field epidemiology.” With the advent of decentralization, however, a need to prepare epidemiologists for work at the state and local levels has also arisen. In provinces and districts, epidemiologists are needed to develop and maintain surveillance systems, manage outbreak investigations, and follow up with prevention and control procedures. In hospitals, epidemiologists are needed to fight infection and to design, implement, and evaluate interventions. Epidemiologic knowledge is also needed at the primary level to “put epidemiology on the ground,” as a Mexican respondent noted.

One might conclude that a “critical mass” of FETP alumni is necessary before any far-reaching impact of the program on the development of public health in the countries can be observed, and before the program’s organizers and participants think they are making a difference. During the initiation period of an FETP, the tasks before the program’s organizers and participants loom large and their means to address them remain minimal. A Spanish respondent referred to the number of graduates produced thus far by the Spain FETP as “one grain of sand,” and hypothesized that it is only if FETP continues and more people receive training that a change will be observable. Another Spanish respondent explained how the development of a critical mass of FETP graduates will contribute to the overall development of public health in Spain. In the respondent’s opinion, public health has yet “to reach the operative level where it achieves an important level of attention.” The respondent believes the FETP graduates will

contribute directly to this by applying and sharing what they have learned from the program in the situations they encounter in their jobs.

Our impression is that FETP is in fact functioning as a train-the-trainers program and that a great deal of formal and informal training is occurring in the post-graduation years. Given the fact that FETP alumni will likely find themselves at some point in their career training others, some instruction in training methods may be warranted. Also, dedicating resources to FETP training activities in communities might increase the diffusion rate of epidemiologic methods and principles — a critical issue in a decentralized health system.

9.1.4 Public Health Networks

The FETP concept was derived from the model of the successful Epidemic Intelligence Service. EIS has provided a strong basis for technical support of public health in the United States by creating a cohort of epidemiologists who share a training experience. They are located in CDC and dispersed throughout the United States. The “old school tie” of the EIS is a powerful asset to public health in the United States because it constitutes a national network that is activated in emergency situations. People call their friends when they need information and assistance. There is some evidence that this is happening in some of our site visit countries, but not in others. There is reason to believe, however, that the need for this informal network will become even more crucial as decentralization moves forward in these countries.

The assumption that everyone will be able to participate in the international public health community in English is a problem. The FETP program requires communication in English as a condition of participation, and CDC assumes this capacity in developing support for programs. Meetings are conducted in English and documents are prepared in English. This is probably the only practical way for CDC to support the program overall. But 14 of 16 FETP programs are located in non-English-speaking countries. While FETP participants normally can communicate in English, their ability to perform at a professional level in this language varies considerably. For example, many FETP trainees who are not native English speakers can present a paper in English, but have great difficulty responding adequately to questions from the audience.

Not everyone can go to international meetings because of high travel costs to distant destinations. International meetings are an important incentive for publication for FETP trainees. But this is too costly to form a basis for the creation of strong international networks.

Regional networks with their own meetings offer a better possibility. Regional cooperation in training, technical assistance and dissemination has cropped up from time to time in discussions of future directions for the FETP. The Europeans and the Asians are beginning to move in this direction; but this theme did not come up in our site visit discussions of international linkages.

9.1.5 Sustainability

A strong message from all of our experience with FETPs has been that one size will not fit all. The FETPs must be flexible and adaptable to the state of public health in participating countries and must respond to changing political and economic conditions if they are to be sustained. Since we only went to countries that had ongoing programs, we have no data on the conditions underlying failure of programs. But those that we studied have all been required to adapt to health agency reorganizations, funding limitations, leadership crises and redefinition of the role of national ministries of health. They have all managed to do so, and even to take advantage of new conditions.

In our interviews, training staff and graduates alike recognized that decentralization brings with it new opportunities for a democratization of knowledge and a sharing of burdens that will strengthen the public health systems of their countries. The FETPs clearly have a role to play in training a new generation of epidemiologists who will operate the provincial surveillance systems and lead the teams that investigate outbreaks. However, this role is quite different from that of the FETP's earlier mission of staffing Ministries of Health with qualified epidemiologists. By and large, the FETP has done this job well in the countries that we visited. But these are not laurels on which the program can afford to rest for very long.

When we began this evaluation, there was some question about the ability of FETP countries to absorb the continual stream of epidemiologists that an effective, autonomous and institutionalized FETP would produce. This concern is not supported by our data. Consistent with its initial goal to develop "field epidemiologists," the FETPs have been successful in creating a new breed of technically-trained "real world" public health practitioners, and at an opportune time. Decentralization has moved rapidly in the years since the implementation of the first FETP in Thailand in 1980, and it has created an expanding market for what the FETP produces.

Institutionalization is not well defined in the FETP program. The definition we used was arbitrary in the sense that reasonable development experts might disagree as to whether these are the correct indicators of long term viability of a program within a government structure. The definition of

institutionalization is always somewhat arbitrary, since this is a process without clear-cut benchmarks or a single trajectory in all instances. But defining institutionalization is less important than recognizing when it is occurring and how this affects the sustainability of programs. In most cases, programs need a regular position in an agency organizational chart, regular funding, and an explicit role to fill if they are to survive political and economic changes in their governments. But here too, one size will not fit all. For example, the program in the Philippines does not officially have an institutional “home” for legal reasons unique to the Philippines. Yet this program has been sustained since 1987 and performs a critical public health role in that country.

9.2 Recommendations

At the conclusion of each findings chapter, we have summarized recommendations made by respondents for improvements to the FETPs in countries we visited. These recommendations are made from the stakeholders’ perspectives: that of participating countries and that of individual participants in the FETP. While these give some indication of measures that can be taken to improve the program as a whole, they do not focus on the FETP as a CDC program.

In this section, we shift to the CDC perspective, making the following recommendations for actions that CDC can take in its own administration and management of the FETP program. In developing this section, we have tried to focus our recommendations on program areas in which CDC can exert some influence. Since CDC’s role is largely in a facilitating and advisory capacity, many of these recommendations can only be implemented through CDC’s technical influence and prestige.

9.2.1 Recommendations for Improving Program Recruitment and Development

CDC should look for a strong in-country counterpart to champion the program in the MOH (or similar national agency) in which the FETP must eventually become institutionalized. In establishing new programs, CDC should identify such individuals early in the process and assure their commitment to the FETP as much as possible over at least the first few years. Host country “champions” should be key players in all negotiations around planning, implementing and modifying the program.

CDC should work to develop guidance for new FETPs based on precedent, learning from past problems and difficulties as well as from successes, and focusing on the fundamental elements of programs that work. For example, we have seen in this study that it would be a good idea to liberate

trainees from some of their work when they return to their positions during the second year of the program. CDC could bring this information to negotiations for future study. Guidance can take the form of written guidelines to be disseminated to program staff who are implementing programs. Generally speaking, brief, simple, and broad guidance is more useful across many different countries than overly detailed and overly prescriptive recommendations.

CDC should be assured that all parties involved agree on the conditions under which the program is being initiated before committing to the support of an FETP. The conditions to be agreed upon may vary, although this research suggests some agreements that improve the likelihood of success. For example, there should be a full-time counterpart in the country, trainees should have at least minimal financial support, computers, release time, etc. However, the presence of an agreement and monitoring of that agreement over the early stages of the FETP is important. If there is significant deviation from what experience has shown to be effective, CDC may wish to re-consider its support of programs that fail to reach autonomy or become institutionalized.

CDC should encourage FETPs to broaden participation in the trainee selection process by involving a variety of MOH program directors, as well as representatives from other government agencies concerned with occupational health, environmental health, injury and other non-communicable disease areas. This would improve buy-in to the FETP at the national level and might enlarge the trainee pool by making the program more broadly known to other potential “users” of FETP graduates.

9.2.2 Recommendations for Improving the Quality of Training

CDC should encourage host country programs to develop a formal curriculum that covers other surveillance systems, moving beyond infectious disease into surveillance of non-communicable diseases, injuries and violence. This is essential if graduates are to be responsive to emergent health problems in their countries over the course of their careers. There should also be training in the application of epidemiological methods appropriate to these conditions.

The field experience also should be expanded to include some exposure to program planning and evaluation, public health administration, health economics and similar areas around a variety of public health issues. This will prepare trainees to address the increasingly complex problems being referred to FETPs from the regional and local levels, where specialization in epidemiology as strictly defined is seldom consistent with broad job responsibilities.

Material on the political realities of public health delivery and its implications for managing outbreaks and other public health problems should be covered in the curriculum. Practicing epidemiologists will need increased political sensitivity under decentralization. They can be prepared for political problems if they are taught to think about this as part of their training. In this context, media relations should be part of the FETP curriculum to prepare trainees to work with the press. The Philippines FETP provides a model of how this can be done.

Training should make better use of targeted, special purpose workshops that provide trainees with specialized expertise. For example, one graduate suggested a workshop on how to conduct negotiations with superiors in Ministries of Health. Another suggested ending training with a workshop that integrates all of the elements presented in the program. Whatever the topic, focused attention on a critical issue for one or more days is a good way to forge theoretical and practical experience into a useful tool.

Distance learning options should be explored for trainees who may not be able to leave their positions for the full length of the program. CDC should help FETPs to make optimum use of state-of-the-art technology and be prepared to upgrade technological approaches as better ways of communicating become available.

9.2.3 Recommendations for Improving Public Health Usefulness

For the greatest impact of the FETP on the country's public health infrastructure, trainees must apply their training effectively. Epidemiology training alone will not create public health systems that can adapt to shifting organizational arrangements and emergent public health needs; it must be applied to the country's leading public health problems.

CDC should encourage FETPs to move from a reactive to a proactive mode in bringing epidemiological expertise to the public health infrastructure of their countries. Surveillance systems are needed that will help identify problems in advance of a crisis, so that communities can be advised about preventive measures. When the needs of the country warrant it, they should move strategically to establish surveillance of conditions in addition to acute, infectious diseases, including chronic diseases, trauma and injury, and occupational and environmental health.

CDC can encourage FETPs to broaden the program to include training in the basic skills of management and administration, program design and development, planning and evaluation. These can provide important connections between the FETP and the policy and decision-making apparatus in ministries of health. In many programs, the majority of FETP graduates will end up in positions with

administrative responsibilities at various levels. In these positions, FETP graduates will need to be able to plan and evaluate programs, as well as to design, implement, and monitor interventions and health service delivery systems.

Most FETP graduates will become part of the government function for managing public health problems in their countries. Regardless of whether they become decision makers, FETP participants need to understand policy and decision-making procedures and mechanisms for effective surveillance and outbreak investigations. They must know how to convince policy makers of the need for public health action. To do this they must have an understanding of economic issues and financial planning.

CDC should be alert to the need to identify and support the emergence of strong public health leaders in FETP countries. And they should encourage building leadership within the FETP training itself. When programs fail, they almost always fail because of a lack of leadership and team-building. Even in the course of the core FETP activities of surveillance and outbreak investigation, team-building and leadership skills are important for the mobilization of staff and health professionals in support of these activities. Leadership can be taught and practiced in training programs like the FETP.

9.2.4 Recommendations for Improving Professional Linkages

Establishing FETPs in the host countries has developed and strengthened ties between the participating countries, CDC, and other health organizations in the United States. Connections through the CDC consultant during the early years of the programs have led directly to important contacts and collaboration with public health researchers at CDC and elsewhere. Although FETP has not yet had a large impact on broader international networks, this is a role that the long-standing programs are eager to see grow and expand.

It would be helpful if CDC could expand its efforts to place the FETP within an international network of public health organizations. Its role would encompass helping to develop the basis for an international epidemiologic network that should be governed and managed outside of CDC. The Association of State and Territorial Health Officials is a model for this. In addition, regional networks would be an important step to broaden the base of participation in the network and generate new sources of regionally appropriate technical assistance.

Improved language support services at international meetings is important for epidemiologists whose primary language is not English. This could be done by mobilizing facilitators who are bilingually competent. It would also be helpful to provide or designate translators to assist with questions at FETP

Directors' Meetings and other international meetings. CDC should translate written material at least into Spanish. FETP directors and trainers, even trainees, may be willing to help translate materials if asked.

Another important role for CDC would be to provide language and editorial assistance to FETP participants who submit publications to English-language international journals. CDC has clear expertise in this area and such support fits well within CDC's technical assistance mission.

9.2.5 Recommendations to Improve Sustainability

Many of the recommendations in this area focus on ways to look ahead to autonomy and institutionalization of FETPs and prepare the way for these transitions. This can be done through advance planning and by seeking opportunities to ensure that the FETP is widely recognized for the good work that it does.

CDC should work with host countries to raise the profile of FETP achievements so that the program can continue to attract trainees and maintain itself despite political changes. It is important to seek opportunities to help health administrators, at all levels and in all sectors of the health system, to understand the importance of epidemiology as a public health science. This can be done by showcasing the FETP in any appropriate venue available: at professional meetings of other medical fields, at special purpose conferences, and in professional and popular publications. The role of the FETPs as advocates for epidemiology in the health sectors of their respective countries was a recurring theme in our site visits. One respondent told us that clinical epidemiology will not have an impact on the larger health issues, yet that is where the best people are heading. There needs to be greater recognition of the value of field epidemiology for the FETP to thrive and accomplish its public health mission.

In some cases, there needs to be an increase in the profile of the FETP in the Ministry of Health. People who make decisions about priorities and funding in the MOH need to be convinced of the benefits of the program. Faculty support, through sponsorship of ongoing, in-country research with short-term, long-distance technical assistance from CDC, would be of great benefit. This would also provide research opportunities for trainees and would generate a favorable reputation for the FETP among government officials, academics and clinical practitioners.

CDC's prestige as an international leader in epidemiology can be mobilized to highlight accomplishments of host-country programs to the advantage of FETPs, especially in the early part of implementation when the program may not yet be well-known. CDC site visits, attendance of host country FETP staff at international meetings, and of course the presence of CDC-sponsorship of the

FETP, are helpful if brought to the attention of policy makers in the ministries of health and in other government agencies. CDC staff could work with host country FETP staff to identify opportunities to publicize to the health sector in the host country the benefits of having an FETP.

Sustainability can be enhanced by developing a broad and precise consensus among health professionals at the district, regional, and local levels about what the FETP can do in the community. Establishing a dialogue around the FETP at the community level will generate buy-in, and potentially trainees, so that interest in the FETP comes from inside the community rather than being foisted on the community from outside.

Finally, at start up, CDC can work with in-country health professionals and CDC consultants to develop an institutionalization plan appropriate to the specific country. This should contain goals and objectives, proposed methods for attaining them, and reasonable timelines. This plan should be mentioned and discussed as part of regular program reviews.

9.3 Recommendations for CDC's Future Role in the FETP

Many of these recommendations cannot be implemented directly by CDC because of the nature of the FETP. To protect the flexibility of the program and the in-country ownership that is essential for sustainability, CDC can only give advice as persuasively as possible. However, there are three clear roles for CDC that are relevant to FETPs X whatever their relationship to CDC, their own Ministries of Health or their stage in the FETP process.

First, CDC can provide prestige and political clout to those in-country advocates who are championing the program. Sometimes just having visible CDC involvement improves the position of the Ministry of Health in leveraging support for the program. For example, sending host-country FETP staff to Atlanta or to international meetings, or site visits from CDC staff can help raise the profile of the FETP in the host country. The profile of the program is an important benefit to FETP participants — it enhances the capacity of public health officials in host countries to access colleagues elsewhere who may be encountering similar public health problems.

Secondly, specialized technical assistance is important. This is a role that CDC — and especially the Epidemiology Program Office X has often effectively assumed to support public health action in the United States as well as internationally. Short term, long-distance technical assistance is best. Long-term in-country support is very costly. However, respondents, even in autonomous countries, see a need for continuing CDC's role in providing specialized technical assistance on request.

Finally, support of an international network is a role that CDC has played in the past and can continue to play in the future. This is a special, but not always problem-free, niche that CDC has established over the 18 years of the FETP. CDC's focus is on turning over the work of building and maintaining international connections to public health colleagues in other parts of the world. Top-down networking will not work. Unless a network emerges from the bottom up, there will be no initiative to activate it and use it. CDC's role should be that of a leader among equals, recruiting others to help build and maintain the routine linkages.

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